

BM-21/23

SERVICE MANUAL

Ver. 1.1 2005.08



Photo: BM-23

US Model

BM-21/23

Canadian Model

BM-23

AEP Model

BM-21/23

UK Model

BM-23

Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MB-23-101

SPECIFICATIONS

Track system

4-track 2-channel monaural

Tape

Normal position type

Tape speeds

BM-23: 4.8 cm/sec. (1⁷/₈ ips), 2.4 cm/sec. (1⁵/₁₆ ips)

BM-21: 4.8 cm/sec. (1⁷/₈ ips)

Speaker

Approx. 3.6 cm (5/32 inches) dia.

Frequency response

200 – 8,000 Hz at 4.8 cm/sec.

Input

Microphone input jack [PLUG IN POWER] (minijack)

Sensitivity 0.3 mV for 3 kilohms or lower impedance

Output

Earphone jack (minijack) for 8-ohm earphone or load impedance

10 kilohms or higher

Battery life

See *Preparing a Power Source*.

Power output

240 mW (at 10 % harmonic distortion)

Power requirements

- Two R6 (size AA) batteries (not supplied): 3V DC
- Sony AC-E30HG AC power adaptor (not supplied)
- Sony DCC-E345 car battery cord (not supplied): 12V car battery

Dimensions (w/h/d)

Approx. 88.1 × 129.2 × 32.3 mm (3¹/₂ × 5¹/₈ × 1³/₁₆ in.)

incl. projecting parts and controls

Mass

Approx. 300 g (10 oz) incl. batteries

Supplied accessory

Carrying case (1) (BM-23 only)

Design and specifications are subject to change without notice.

PORTABLE DICTATOR

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

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SECTION 1

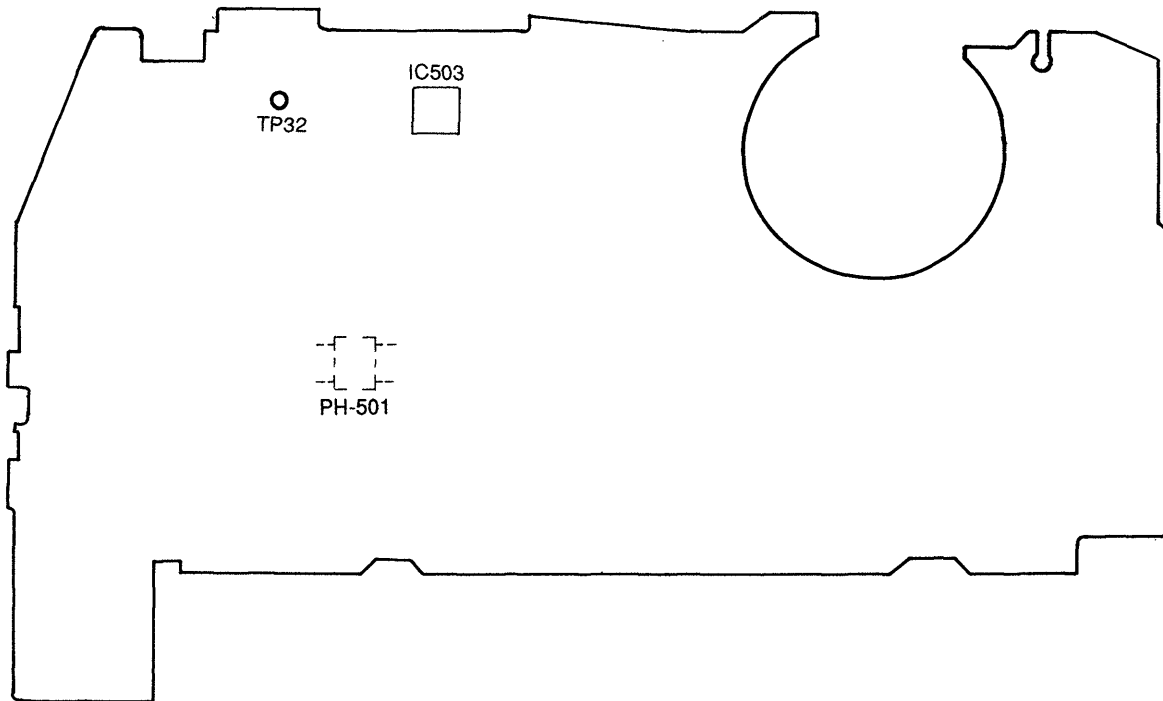
SERVICING NOTE

This unit uses PH501 (photo coupler) to detect reel rotation.
As PH501 is mounted on the audio board, reel rotation will not be detected if the audio board has been removed.
When performing mechanism deck operation and voltage checks with the audio board removed, perform them using the following method.

Method :

Connect TP32 of the audio board and GND with a jumper wire.

AUDIO BOARD (SIDE B)



SECTION 2

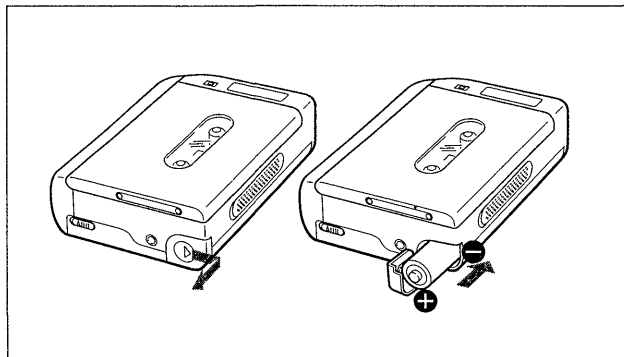
GENERAL

This section is extracted from instruction manual.

Preparing a Power Source

Choose one of the following three power sources.

Dry Batteries



- 1 Open the battery compartment lid.
- 2 Insert two size AA (R6) batteries (not supplied) with correct polarity and close the lid.

When to replace the batteries

Replace both batteries with new ones when the DICT/BATT (dictation/battery) indicator becomes faint and the sound is distorted.

For BM-23 only

You can check the approximate battery condition with the battery indication () displayed while using the dictator.

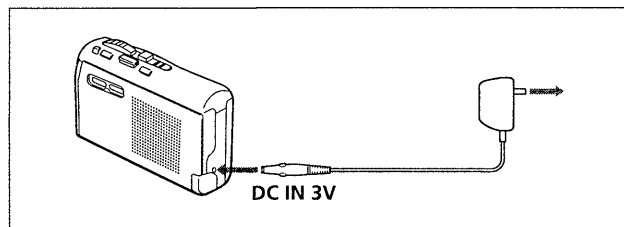
Battery life (Approx. hours)

	Sony alkaline AM3(N)	Sony SUM-3(NS)
Dictating	12	3

Notes

- When replacing the batteries, all the indications in the LCD display light up in a moment and the tape counter will return to "000".
- If the unit is not to be used for a long period of time or is to be operated extensively with other power sources, remove the batteries to avoid damage caused by battery leakage and corrosion.

House Current



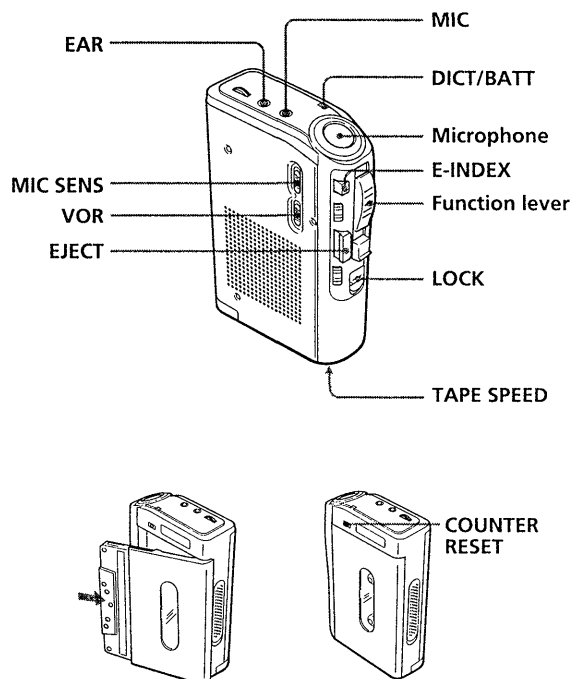
Use the AC-E30M power adaptor (not supplied). First connect the adaptor to the DC IN 3V jack, then to a wall outlet.



Car Battery

Use the DCC-E130L car battery cord (not supplied).

Dictating



Before operating, make sure the following points.

- The LOCK switch is set to the opposite direction of the arrow.
- Nothing is connected to the MIC (microphone) jack.
- Set the VOR (voice operated recording) switch to ON, if necessary.

- 1 Press EJECT to open the cassette compartment lid.
- 2 Insert a cassette with the side to start dictating facing the lid.
- 3 BM-23 only: Set the TAPE SPEED selector to the desired tape speed.

Recording time*	Set to
60 minutes	4.8 cm**
120 minutes	2.4 cm

* Using both sides of a DC-60 cassette.

** For optimum sound (recommended for normal use), set to 4.8 cm.

- 4 Set the MIC SENS (microphone sensitivity) selector to the desired position.

Use for	Set to
normal use	DICT (dictation)
recording a conference or telephone conversation	CONF (conference)

- 5 Slide up the function lever to DICT (dictation).
- 6 Speak into the microphone.
The DICT/BATT indicator flashes during recording.
- 7 To stop dictating, slide down the function lever to STOP.
To eject a cassette, press EJECT.

Note

Do not use a CrO₂ (TYPE II) or metal (TYPE IV) tape, otherwise the sound may be distorted when you play back the tape, or the previous recording may not be erased completely.

To economize the tapes and batteries

Set the VOR switch to ON. The tape moves only when sound is picked up, and stops automatically when sound is no longer detected (DICT/BATT indicator goes out.), thus the minimum amount of tape is used.

To index the tape contents

Press COUNTER RESET before you start dictating. "000" appears in the LCD display.

To monitor the recording

Connect an earphone to the EAR (earphone) jack.

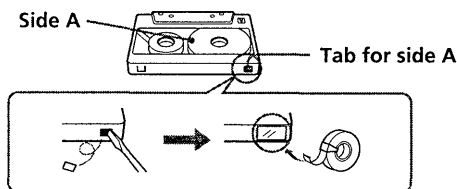
To listen to the just-recorded contents while dictating

Slide down the function lever to BACK SPACE, and release it at the desired point.

When the tape reaches the end and DICT/BATT indicator goes out

Slide the function lever to STOP.

To prevent a tape from being accidentally erased



Break off the cassette tabs from side A and/or B. To reuse the tape for recording, cover the tab hole with adhesive tape.

To erase the entire tape contents

Use the BE-9H cassette eraser (not supplied).

Recording with an external microphone

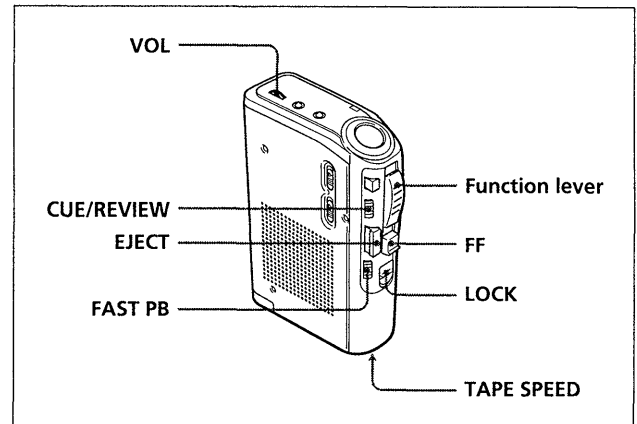
Connect the microphone to the MIC jack. When connecting the electret condenser microphone with "plug-in power" system, the power of the microphone is supplied from this unit.

Putting Marks during Recording for Easy Access (BM-23 only)

Press E-INDEX lightly when you have special instructions for your secretary about the material or mark the end of the letter. An electronic index signal will be recorded on the tape while the letter L (=LTR) appears in the LCD display. When the recording ends, stop the tape after the "L" indication disappears.

This signal is the same as the LTR signal of the Sony transcriber. When your secretary uses the Sony transcriber equipped with auto-stop function, the tape automatically stops at each index signal when it is rewound or rapidly advanced. Your secretary will be able to search a necessary dictation easily.

Listening to the Dictation



Make sure that the LOCK switch is set to the opposite direction of the arrow.

- 1 Press EJECT, then insert a cassette with the side to start listening facing the lid.
- 2 BM-23 only: Set the TAPE SPEED selector to the same position as that in recording.
- 3 Slide down the function lever to LISTEN.
- 4 Adjust VOL (volume).
- 5 To stop playback, slide up the function lever to STOP.

To listen to the tape at a faster speed than normal

Slide FAST PB (fast playback) up while listening to the tape.

To rewind the tape

Slide down the function lever at the BACK SPACE and release it at the desired point.

To rapidly advance the tape

Set the function lever to STOP, then keep pressing FF (fast forward) and release it at the desired point.

Searching an index signal or a desired portion (BM-23 only)

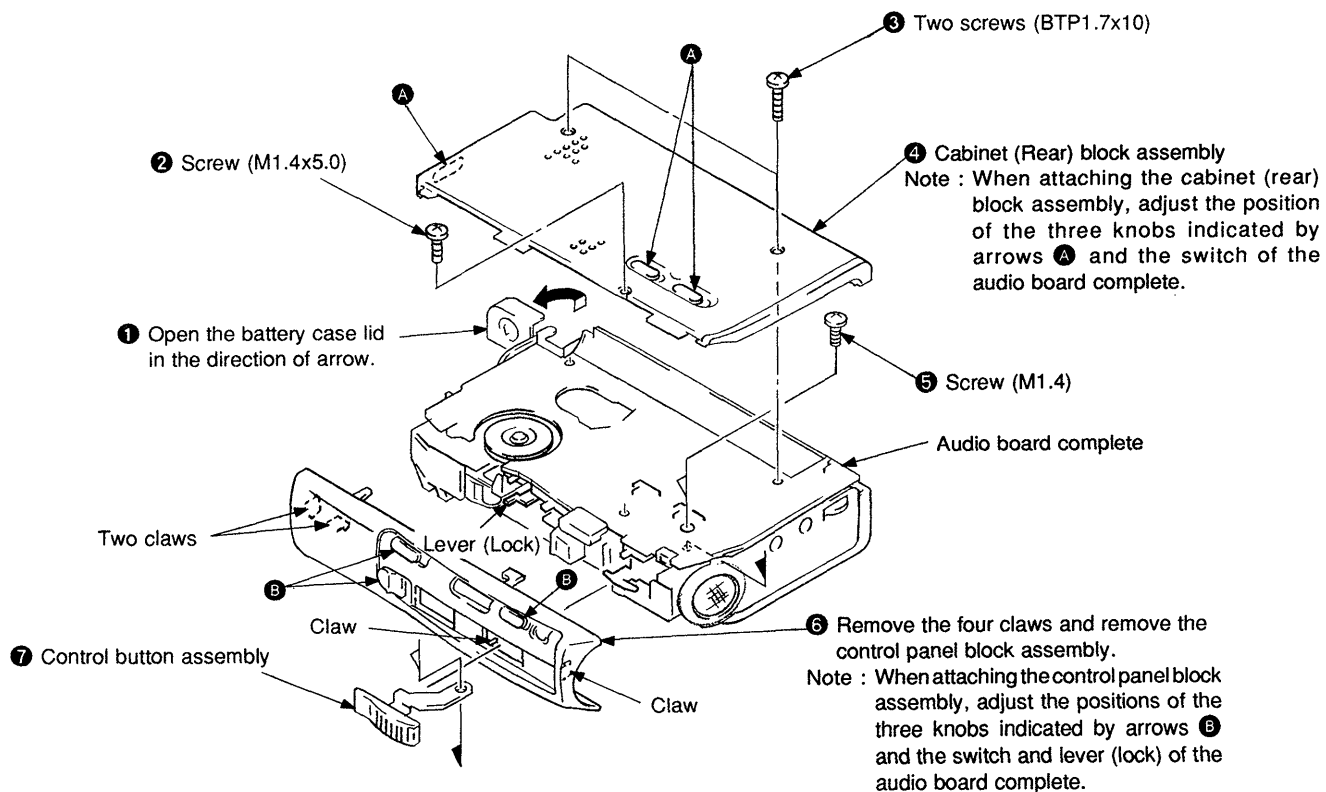
Set the CUE/REVIEW switch to ON. You can hear the recording including an index signal rapidly in the fast forward or rewind (back space) mode. A beep tone (index signal) will make it easier to access at that position. When it is not necessary to hear the recording including an index signal, set the CUE/REVIEW switch to OFF.

Searching a desired portion (BM-21 only)

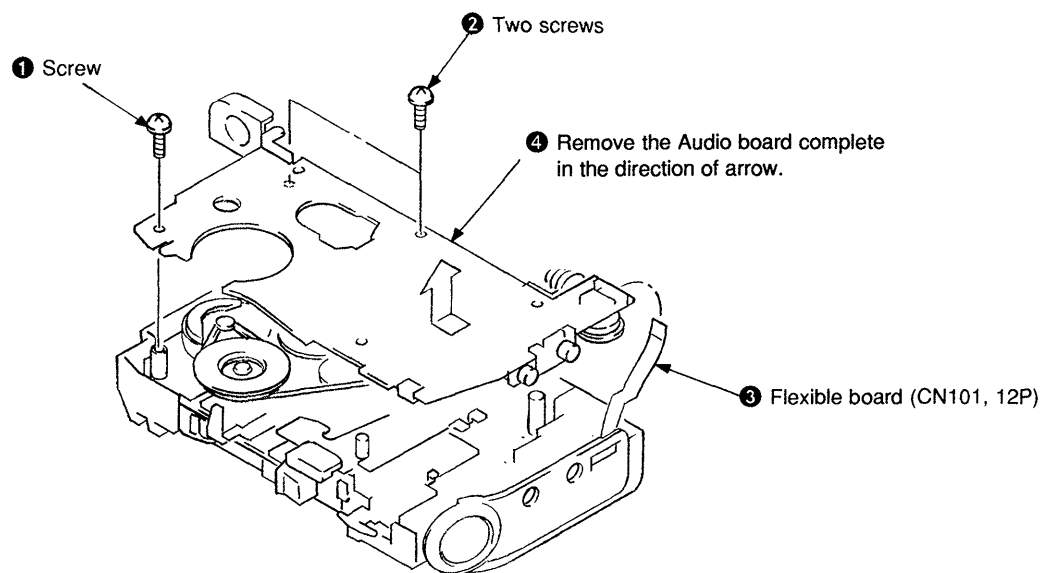
Set the CUE/REVIEW switch to ON. You can hear the recording rapidly in the fast forward or rewind (back space) mode. When it is not necessary to hear the recording, set the CUE/REVIEW switch to OFF.

SECTION 3 DISASSEMBLY

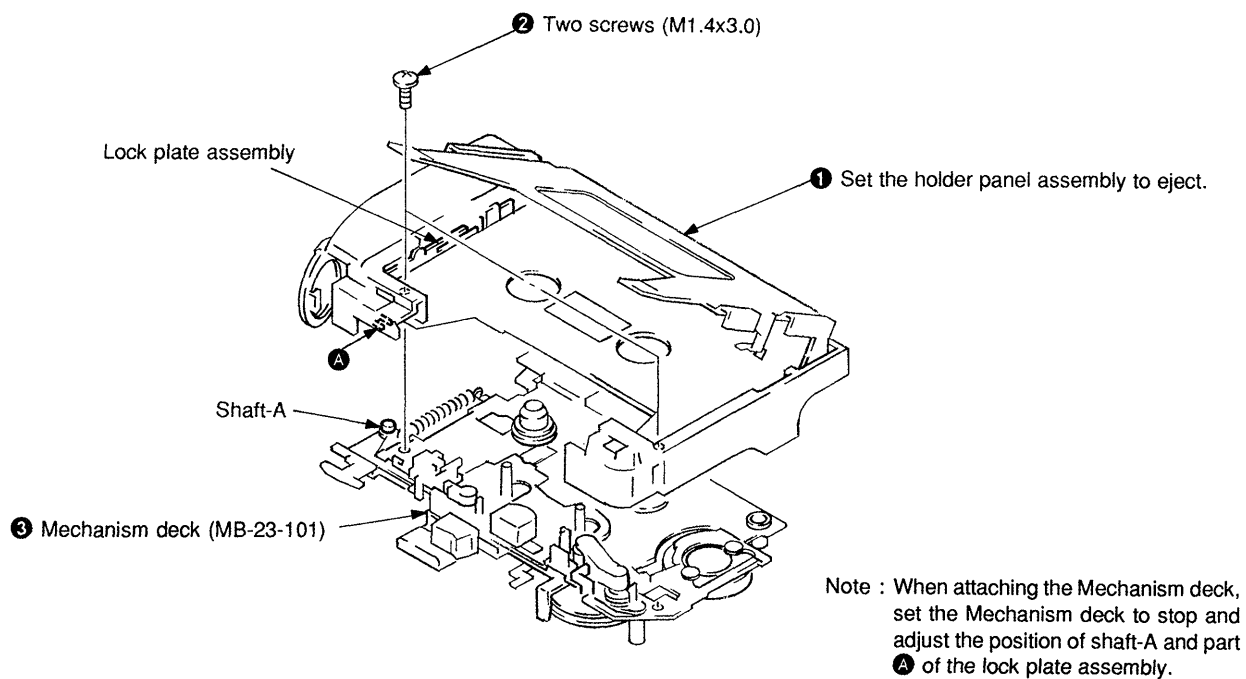
3-1. CONTROL PANEL BLOCK ASSEMBLY REMOVAL



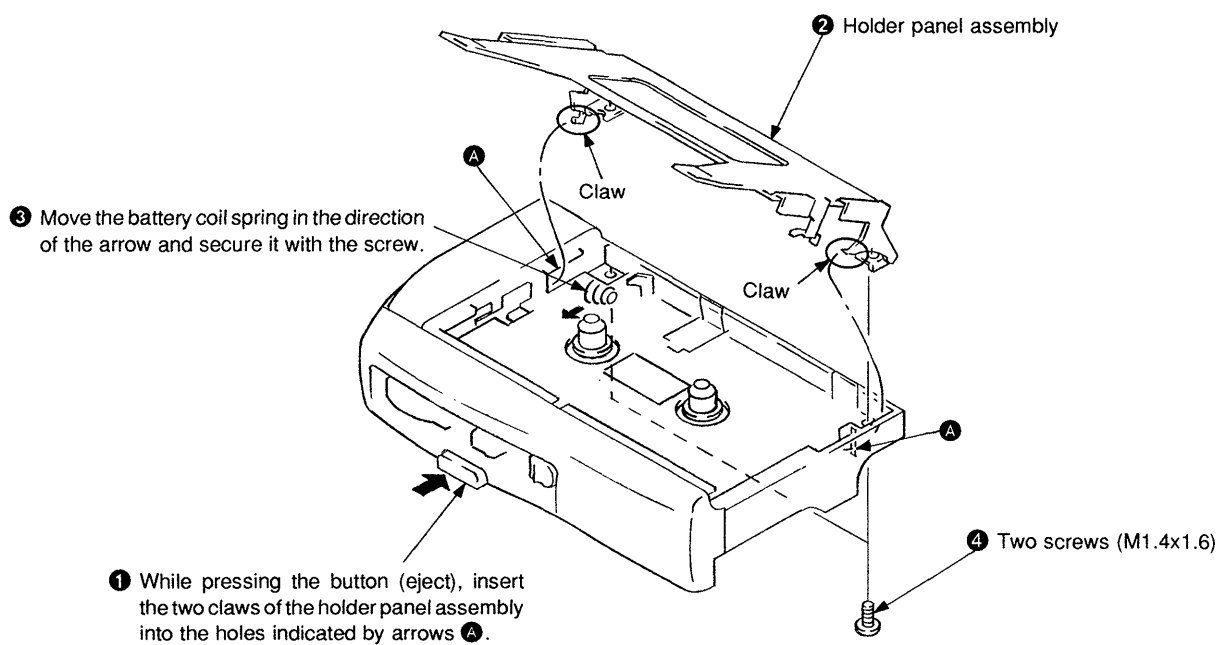
3-2. AUDIO BOARD COMPLETE REMOVAL



3-3. MECHANISM DECK (MB-23-101) REMOVAL



3-4. HOLDER PANEL ASSEMBLY INSTALLATION



SECTION 4

ADJUSTMENTS

4-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab :

playback head	rubber belts
capstan	idlers
pinch roller	
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage (3V) unless otherwise noted.

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	21 — 38 g • cm (0.30 — 0.52 oz • inch)
FWD Back Tension		0.5 — 3 g • cm (0.01 — 0.04 oz • inch)
REV	CQ-102RC	21 — 38 g • cm (0.30 — 0.52 oz • inch)
REV Back Tension		0.5 — 3 g • cm (0.01 — 0.04 oz • inch)
FF	CQ-201B	more than 60 g • cm (more than 0.84 oz • inch)
REW		

Tape Pulling Force Measurement

Mode	Torque meter	Meter reading
FF	CQ-403A	more than 40 g (more than 1.42 oz)
REW	CQ-403R	

4-2. ELECTRICAL ADJUSTMENTS

PRECAUTION

1. Power supply voltage : 3V

Test Tape

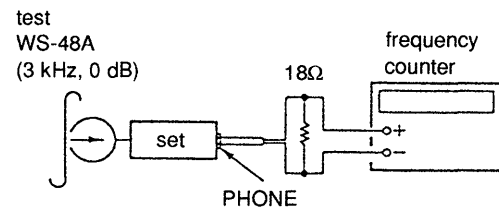
Type	Signal	Used for
WS-48A	3 kHz, 0 db	Tape Speed Adjustment

TAPE SPEED 4.8 cm/s ADJUSTMENT

Switch position (BM-23)

TAPE SPEED Switch : 4.8 cm

Procedure :



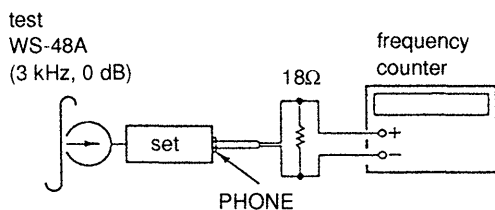
1. Play back WS-48A (tape center portion) in FWD mode. Adjust the RV601 so that the frequency counter reads $3,000 \pm 30$ Hz.
2. Play back WS-48A (tape center portion) in REV mode. Confirm that the reading of frequency counter is within 2.5% from the reading in step 1.

TAPE SPEED 2.4 cm/s ADJUSTMENT (BM-23 ONLY)

Switch position

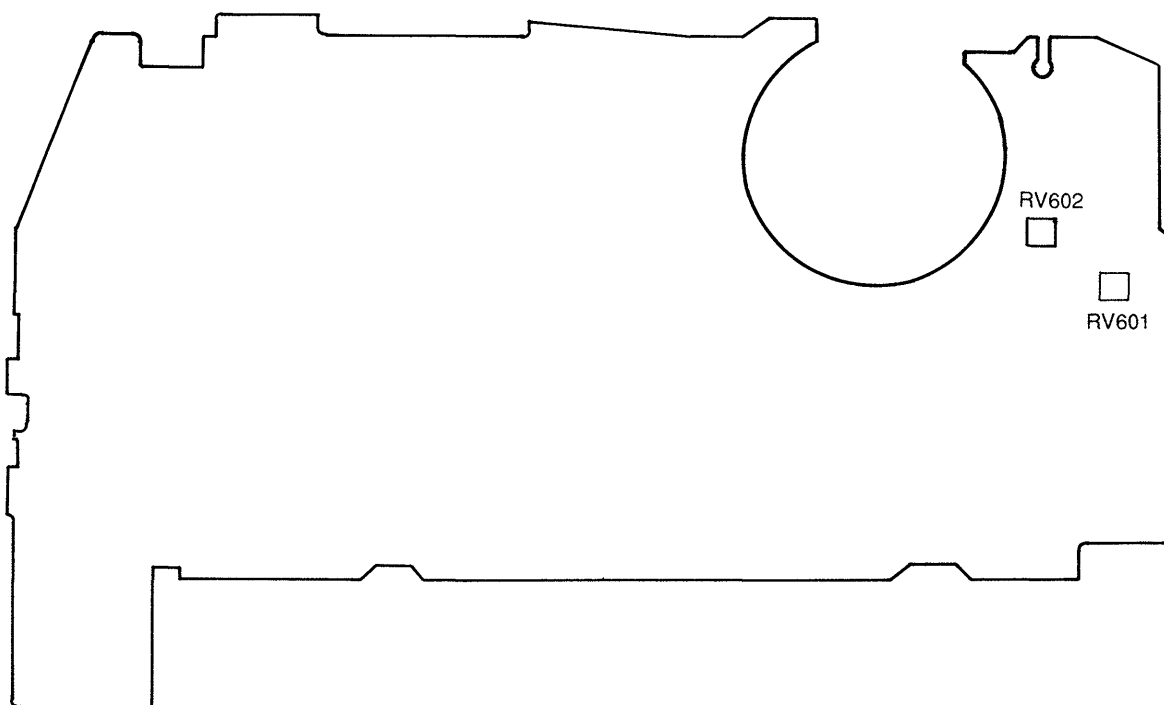
TAPE SPEED Switch : 2.4 cm

Procedure :



1. Play back WS-48A (tape center portion) in FWD mode.
Adjust the RV602 so that the frequency counter reads $1,500 \pm 15$ Hz.
2. Play back WS-48A (tape center portion) in REV mode.
Confirm that the reading of frequency counter is within 2.5% from the reading in step 1.

Adjustment Parts Location Diagram : AUDIO BOARD (SIDE B)




SECTION 5

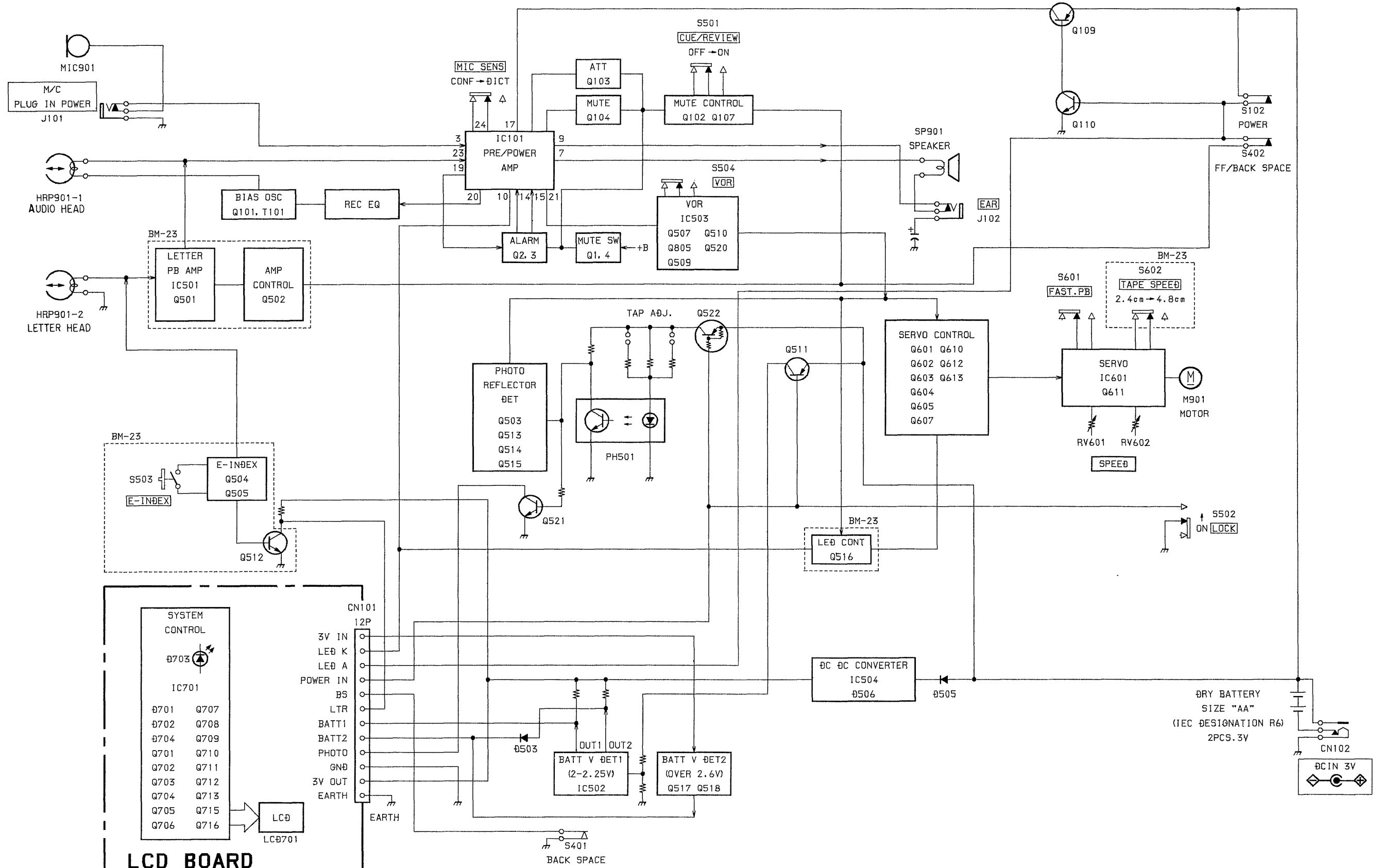
DIAGRAMS

5-1. IC PIN FUNCTION

IC701 SYSTEM CONTROLLER (BU2456-23)

Pin No.	Signal Name	I/O	Function
1	INT	I	Reset terminal
2	GND	—	GND terminal
3	POWER	I	1. When POWER. IN becomes level "L", UP counter, BATT, or LTR is displayed according to PHOTO. IN change. 2. When POWER. IN becomes level "H", the HALT state is set, displaying is stopped, and the detection of all inputs are also stopped.
4	IN. CTL	O	Rc/Rd input control terminal
5	COM1	O	COM 1 First digit (first digit from the right)
6	COM2	O	COM 2 Second digit (second digit from the right)
7	BATT1 (RESET)	I	BATT.IN 1. When BATT1=H, and BATT2=L, "  " is displayed. 2. When BATT1=H, and BATT2=H, "  " is displayed. 3. When BATT1=L, and BATT2=H, "  " is displayed. 4. When BATT1=L, and BATT2=L, "  " is displayed. 5. BATT IN will not be accepted during HALT.
8	BATT2 (LTR)	I	RESET. IN 1. Forces the counter to display "  " while it is displaying. 2. Sets the RAM of the counter to display "  " while the LTR is displaying. 3. RESET. IN will not be accepted during HALT. LTR. IN 1. The counter is stopped if it is displaying and "L" is displayed. 2. Even if "L" is displayed, the counter will operate. 3. LTR. IN will not be accepted during HALT.
9	PHOTO	I	1. When the tape is rotated while the tape recorder is operating, photo detection is input. 2. PHOTO. IN will not be accepted during HALT.
10	BS	I	1. The DOWN counter is set when L and the UP counter is set when H. 2. BS. IN will not be accepted during HALT.
11	SEG8	O	Segment output terminal
12	NC	—	
13	NC	—	
14	SEG1	O	Segment output terminal
15	SEG2	O	Segment output terminal
16	SEG3	O	Segment output terminal
17	SEG4	O	Segment output terminal
18	SEG5	O	Segment output terminal
19	SEG6	O	Segment output terminal
20	SEG7	O	Segment output terminal
21	COM3	O	COM 3 Third digit (third digit from the right)
22	OSC	O	X'tal oscillation terminal (1 MHz)
23	OSC	I	X'tal oscillation terminal (1 MHz)
24	Vcc	—	Power supply terminal




5-2. BLOCK DIAGRAM

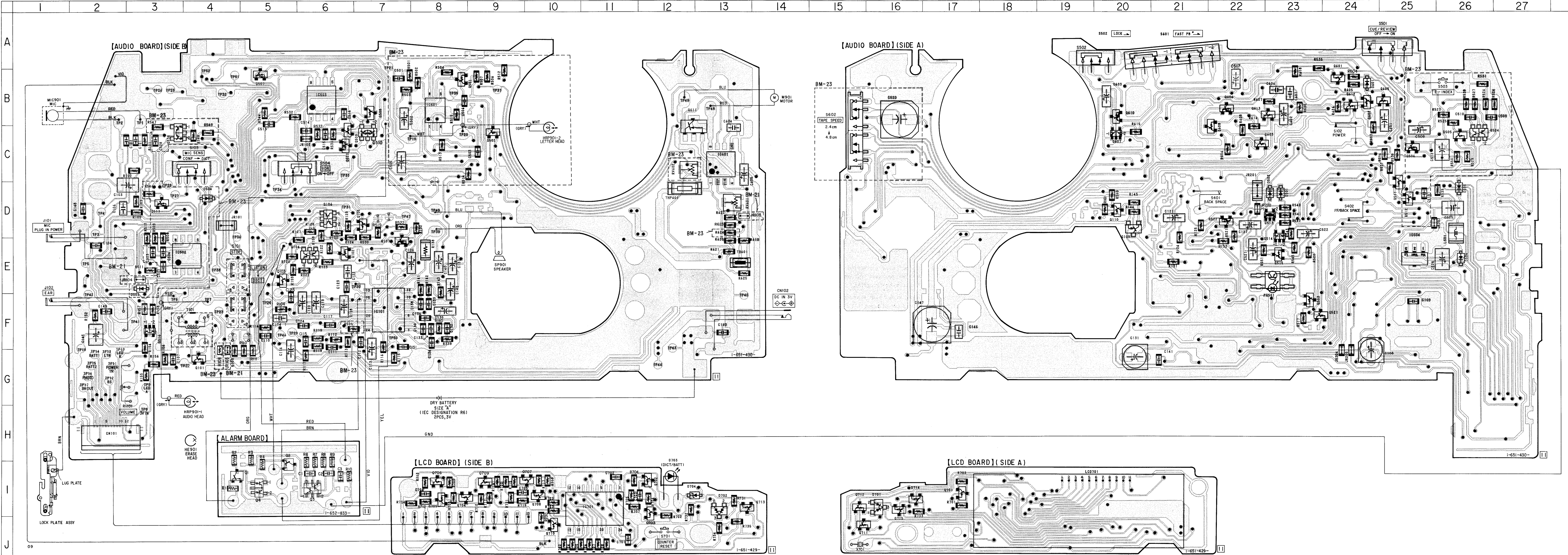


09

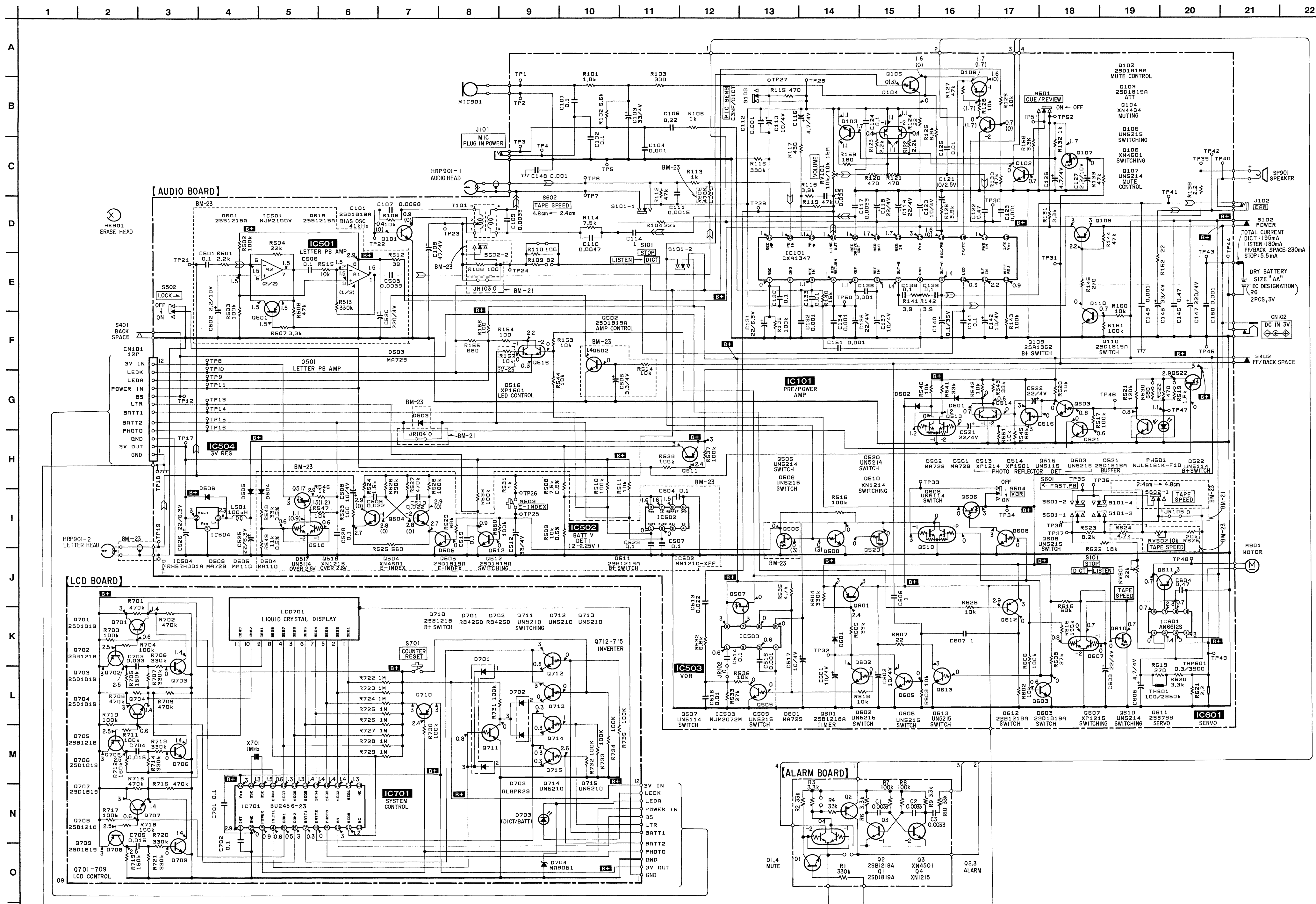
Ref. No.	Location	Ref. No.	Location
D501	D-23	Q507	B-5
D502	D-23	Q508	B-7
D503	F-3	Q509	C-7
D504	D-4	Q510	C-7
D505	D-26	Q511	D-25
D506	E-26	Q512	D-25
D601	B-24	Q513	D-23
D701	I-16	Q514	E-23
D702	I-13	Q515	E-23
D703	I-12	Q516	F-3
D704	I-12	Q517	D-3
		Q518	C-3
IC101	F-7	Q520	C-6
IC501	B-8	Q521	F-24
IC502	E-3	Q522	D-22
IC503	B-6	Q601	B-24
IC504	E-25	Q602	B-24
IC601	C-13	Q603	C-23
IC701	I-11	Q605	B-25
		Q606	B-22
PH501	F-23	Q607	C-20
		Q608	C-22
Q1	I-5	Q610	B-20
Q2	H-5	Q611	B-12
Q3	I-6	Q612	B-24
Q4	I-5	Q613	B-22
Q101	G-4	Q701	I-17
Q102	E-6	Q702	I-12
Q103	E-5	Q703	I-12
Q104	E-5	Q704	I-8
Q105	D-7	Q705	I-8
Q106	D-6	Q706	I-8
Q107	E-7	Q707	I-10
Q109	E-20	Q708	I-10
Q110	D-20	Q709	I-9
Q501	B-9	Q710	J-10
Q502	C-9	Q711	J-15
Q503	F-23	Q712	I-15
Q504	C-27	Q713	I-14
Q505	C-26	Q714	I-16
Q506	C-25	Q715	J-16

Note:

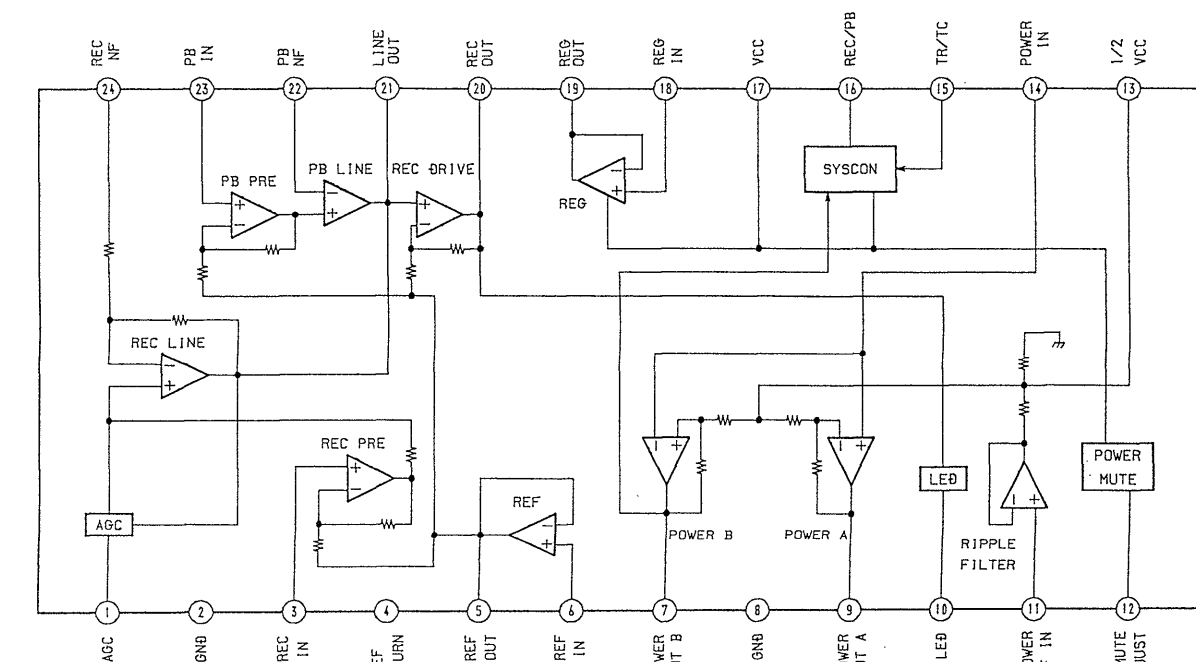
-  : parts extracted from the conductor side.
-  : Through hole.
-  : Pattern on the side which enable seeing.
(The other layer's patterns are not indicated.)



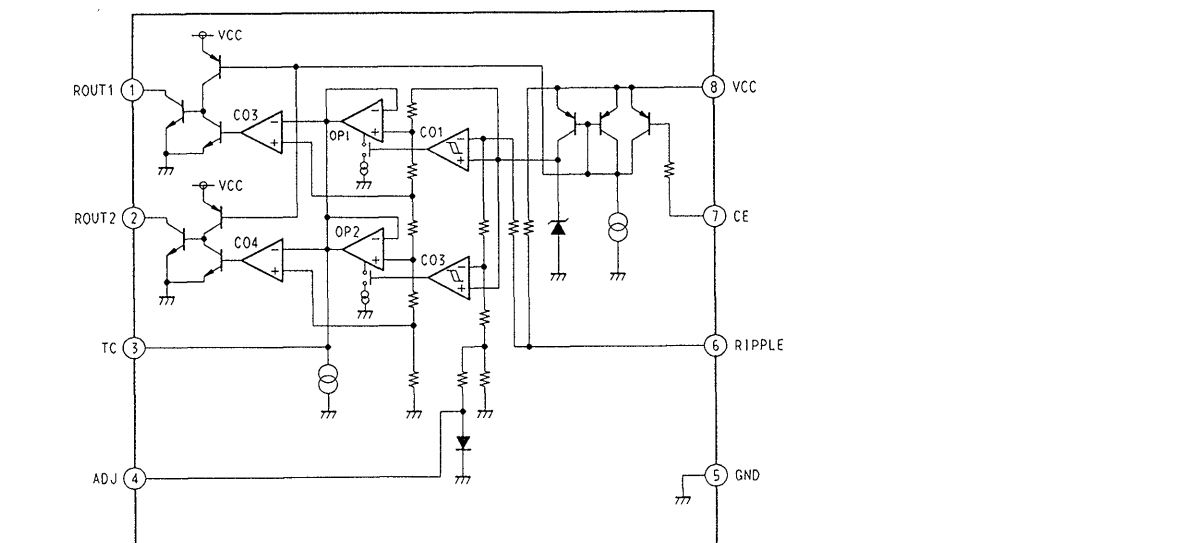
5-4. SCHEMATIC DIAGRAM
• See page 10 for IC Pin Functions.



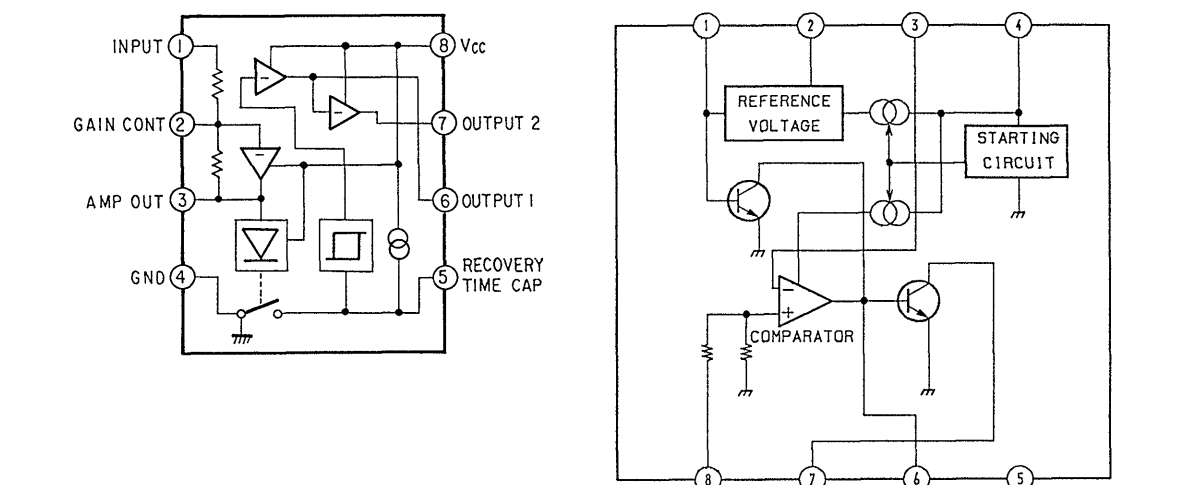
IC101 CXA1347



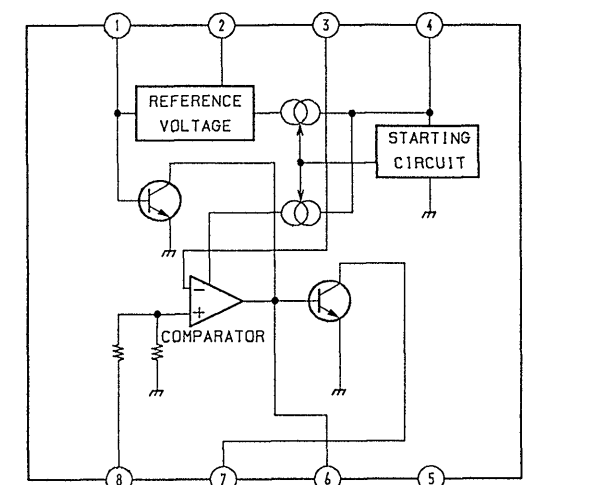
IC502 MM1210-XFF



IC503 NJM2072M



IC601 AN6612S

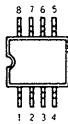


Note:

- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- $\%$: indicates tolerance.
- \square : panel designation.
- B+ : B+ Line
- \square : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- When opening the board and measuring, turned on S102 (POWER) and S402 (FF/BACK SPACE).
- no mark: REC (DICT)
- () : PB (LISTEN)
- Voltages are taken with a VOM (input impedance $10\text{M}\Omega$). Voltage variations may be noted due to normal production tolerances.
- Power voltage is dc 3V and fed with regulated dc power supply from external power voltage jack.
- Total current is measured with no cassette installed.
- Signal path.
- \square : PB (LISTEN)
- \square : REC (DICT)

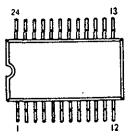
5-5. SEMICONDUCTOR LEAD LAYOUTS

AN6612S
NJM2100V
NJM2072M
MM1210-XFF



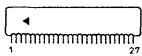
(TOP VIEW)

BU2456-23
CXA1347N

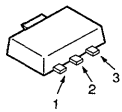


(TOP VIEW)

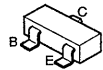
NJ5161K-F10-A



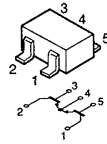
RH5RH301A



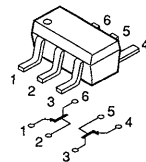
UN5114
UN5115
UN5210
UN5214
UN5215
2SA1362G
2SA1586-YG
2SD1819A-R



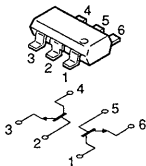
XN1214
XN1215



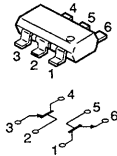
XN4404



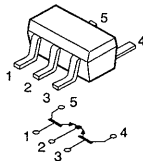
XN4501



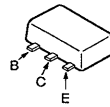
XN4601



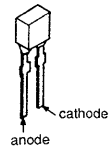
XP1214
XP1215
XP1501



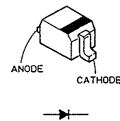
2SB798-DL



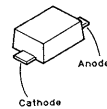
GL8PR29



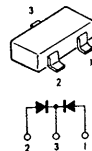
MA110
MA8051



MA729



RB425D



SECTION 6

EXPLODED VIEWS

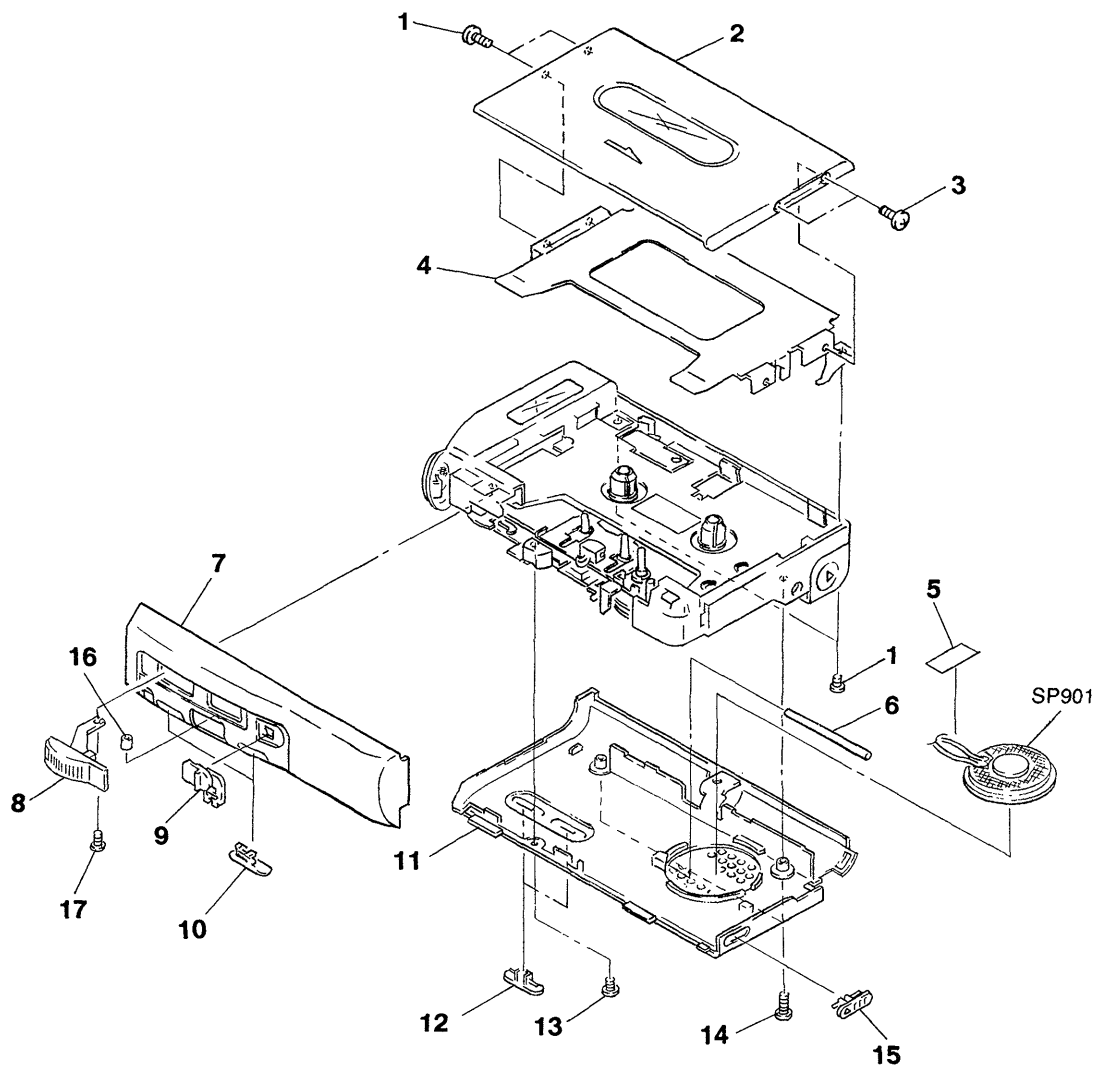
NOTE:

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts Example:
KNOB, BALANCE (WHITE) . . . (RED)

↑
Parts color

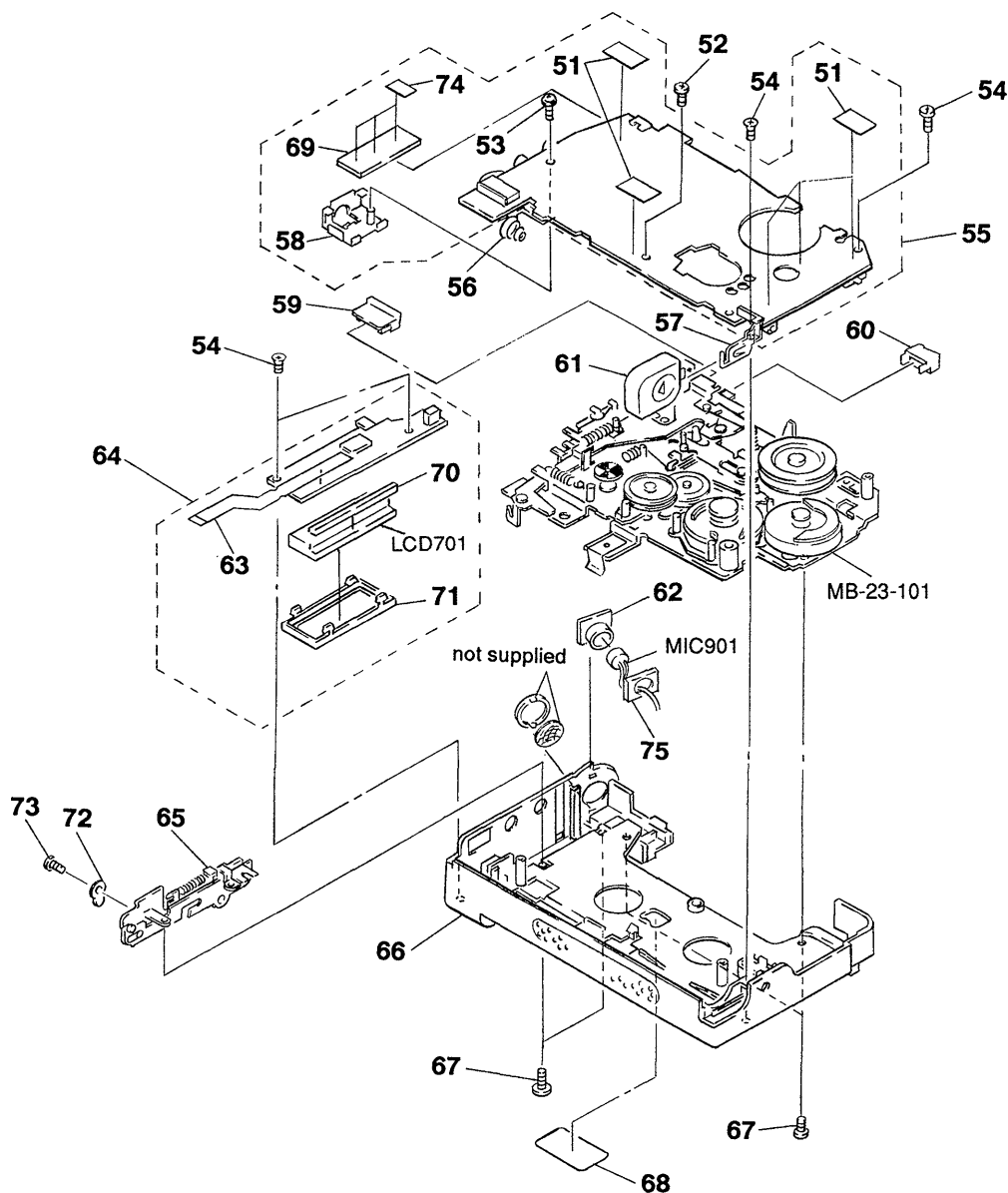
↑
Cabinet's color
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of this parts list.

6-1. CABINET SECTION



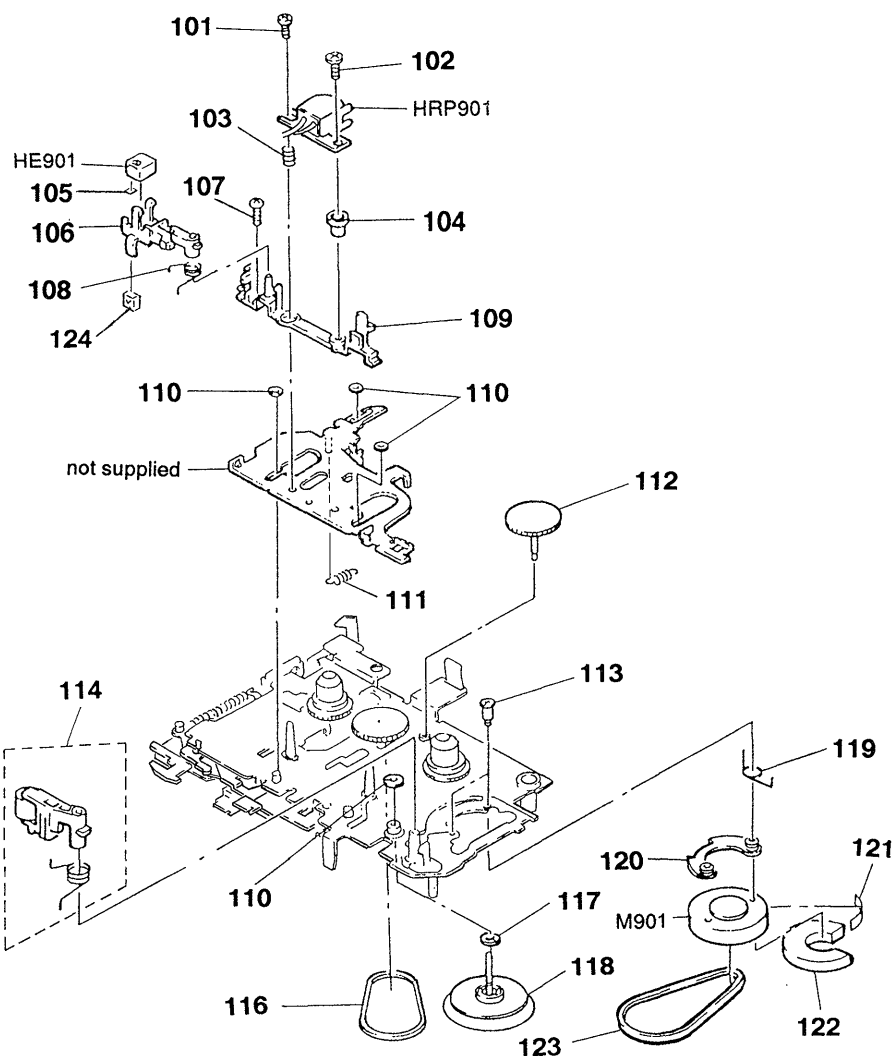
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-704-197-03	SCREW (M1.4X1.6), LOCKING		10	3-909-954-01	KNOB (A)	
2	X-3367-817-1	PANEL ASSY, CASSETTE (23)		11	X-3367-816-1	CABINET (REAR) ASSY (23)	
2	X-3368-079-1	PANEL ASSY, CASSETTE (21)		11	X-3368-081-1	CABINET (REAR) ASSY (21)	
3	3-704-197-42	SCREW (M1.4X2.2), LOCKING		12	3-909-957-01	KNOB (VOR)	
4	X-3367-810-1	PANEL ASSY, HOLDER		13	3-704-197-82	SCREW (M1.4X5.0), LOCKING	
5	3-831-441-XX	CUSHION		14	3-334-565-11	SCREW (B1.7X10), TAPPING	
* 6	3-374-741-01	BRACKET (SPEAKER), CONCLUDE		15	3-365-623-01	KNOB (DOLBY) (23)	
7	3-909-973-01	PANEL, CONTROL (23)		16	3-347-746-01	COLLAR	
7	3-909-973-11	PANEL, CONTROL (21)		17	3-365-630-02	SCREW (M1.4)	
8	X-3367-812-1	BUTTON ASSY, CONTROL		SP901	1-504-294-11	SPEAKER (3.6CM)	
9	3-909-955-01	KNOB (HOLD)					

6-2. PC BOARD SECTION



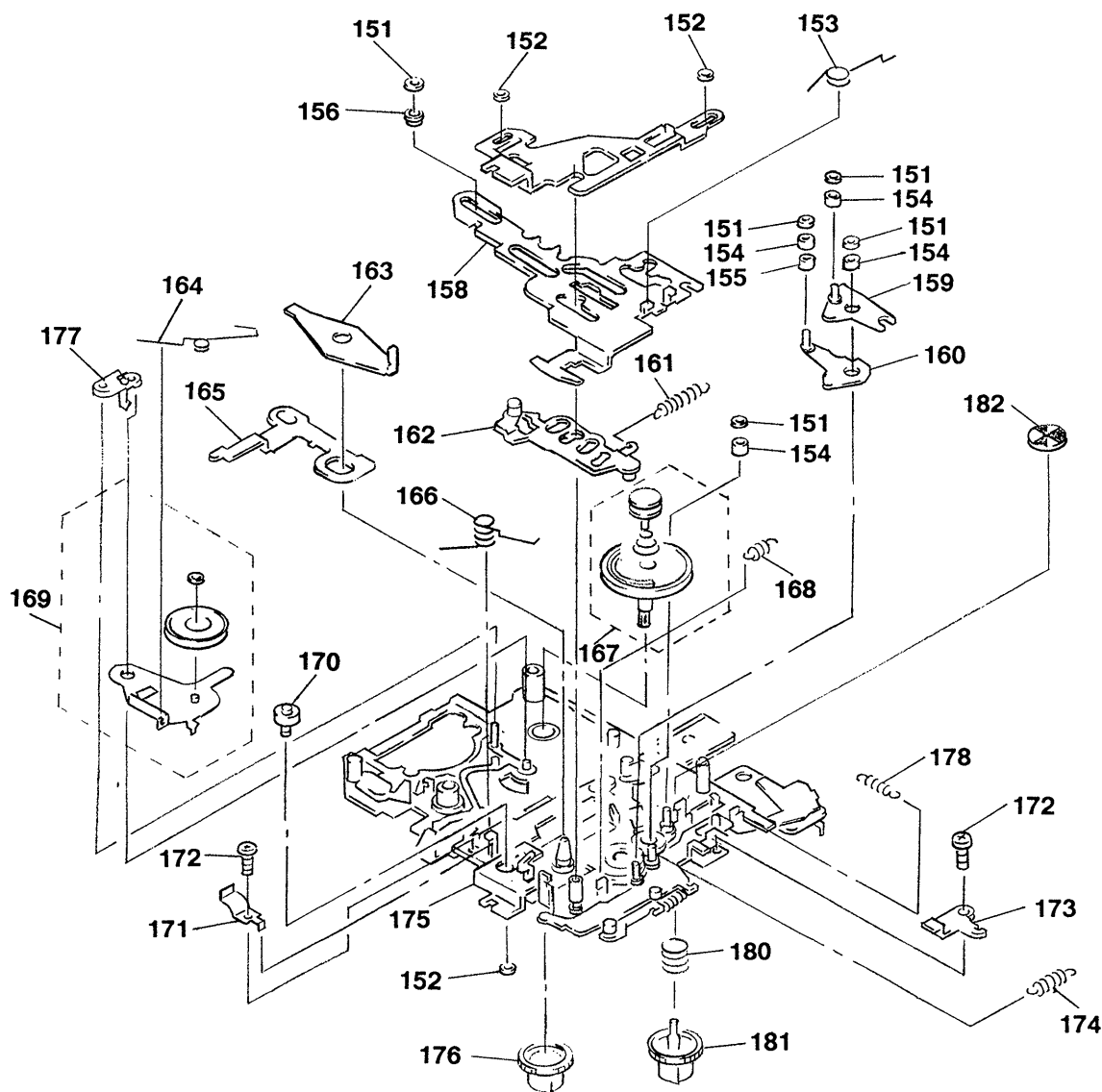
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-831-441-XX	CUSHION		65	X-3367-814-1	PLATE, LOCK ASSY	
52	3-335-797-01	SCREW (M1.4X2), TOOTHED LOCK		66	X-3367-813-1	FRONT ASSY, CABINET (23)	
53	3-703-502-31	SCREW		66	X-3368-080-1	FRONT ASSY, CABINET (21)	
54	3-375-114-61	SCREW		67	3-704-197-33	SCREW (M1.4X3.0), LOCKING	
55	A-3016-512-A	AUDIO BOARD, COMPLETE (23)		68	3-371-862-01	PLATE, ORNAMENTAL	
55	A-3016-561-A	AUDIO BOARD, COMPLETE (21)		* 69	1-652-833-11	ALARM BOARD	
56	3-909-950-01	SPRING, BATTERY COIL		* 70	1-537-724-11	CONDUCTIVE BOARD, CONNECTION	
57	X-3367-811-1	TERMINAL BOARD ASSY		71	3-911-887-01	HOLDER, LCD	
* 58	X-3363-574-1	HOLDER ASSY, JACK		72	7-623-505-01	LUG, 2	
59	3-909-952-01	BUTTON (EJECT)		73	3-891-132-00	SCREW (M1.7X2.0), SPECIAL HEAD	
60	3-909-951-01	BUTTON (FF)		74	4-017-441-01	CUSHION (B)	
61	3-909-953-01	LID, BATTERY CASE		* 75	3-914-611-01	HOLDER, MICROPHONE	
62	3-320-975-01	CUSHION (A), MICROPHONE		LCD701	1-810-464-11	DISPLAY PANEL, LIQUID CRYSTAL	
63	1-652-024-11	PC BOARD, FLEXIBLE		MIC901	1-542-080-11	MICROPHONE, BUILT-IN	
64	A-3016-511-A	LCD BOARD, COMPLETE					

6-3. MECHANISM DECK SECTION-1 (MB-23-101)



Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
101	3-375-135-01	SCREW (1.4), SPECIAL		116	3-371-868-01	BELT (FR)	
102	3-376-177-01	SCREW (M1.4X3.8)		117	3-701-437-41	WASHER	
103	3-371-882-01	SPRING (AZIMUTH), COMPRESSION		118	X-3363-571-1	WHEEL ASSY (ZNDC), CAPSTAN	
104	3-375-045-01	COLLAR (HEAD)		119	3-374-119-02	SPRING (GROUND), TORSION	
105	3-385-317-11	CUSHION (E HEAD)		* 120	3-371-885-01	CUSHION, MOTOR	
106	3-371-851-01	BRACKET (E HEAD)		121	3-831-441-XX	CUSHION	
107	3-704-197-11	SCREW (M1.4X2.0), LOCKING		* 122	3-372-991-01	DAMPER	
108	3-371-873-01	SPRING (E HEAD), TORSION		123	3-371-869-01	BELT (CAPSTAN)	
109	3-371-839-11	BRACKET (HEAD)		124	3-915-014-01	REINFORCEMENT	
110	3-321-483-11	RING, RETAINING		HE901	8-825-779-41	HEAD, ERASE EBF5-36S	
111	3-910-002-01	SPRING, TENSION		HRP901	1-500-126-11	HEADMAGNETIC (RECORD/PLAYBACK)	
112	3-371-854-01	GEAR (FF)		M901	1-541-921-11	MOTOR	
113	3-371-886-01	SCREW (MOTOR), STEP					
114	X-3368-042-1	PINCH ROLLER ASSY					

6-4. MECHANISM DECK SECTION-2 (MB-23-101)



Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
151	3-315-384-11	WASHER, STOPPER		167	X-3367-818-1	TABLE ASSY, FELT	
152	3-321-483-11	RING, RETAINING		168	3-910-004-01	SPRING, TENSION	
153	3-910-006-01	SPRING, TORSION		169	X-3363-568-1	LEVER ASSY, IDLER	
154	3-909-999-01	ROLLER (C)		170	3-909-996-01	SHAFT (CHASSIS-D)	
155	3-909-997-01	ROLLER (A)					
156	3-909-998-01	ROLLER (B)		171	3-915-376-01	SPRING (LOCK), LEAF	
* 157	3-909-985-01	LEVER (EJECT)		172	3-704-197-03	SCREW (M1.4X1.6), LOCKING	
* 158	3-909-987-01	LEVER (SLIDE)		* 173	3-909-986-01	HOLDER (SPRING)	
159	X-3367-822-1	LEVER (REC 2) ASSY		174	3-910-003-01	SPRING, TENSION	
160	X-3367-823-1	LEVER (CL) ASSY		175	X-3367-819-1	CHASSIS ASSY	
161	3-910-005-01	SPRING, TENSION		176	3-371-865-01	GEAR (T REEL)	
162	X-3367-820-1	LEVER (EJECT) ASSY		* 177	3-914-860-01	STOPPER (IDLER)	
* 163	3-909-995-01	LEVER (SW)		178	3-911-371-01	SPRING, TENSION	
164	3-910-007-01	SPRING (IDLER), TORSION		180	3-371-881-01	SPRING (B.T), COMPRESSION	
* 165	3-909-988-01	LEVER (LOCK)		181	3-371-866-01	GEAR (S REEL)	
166	3-371-872-01	SPRING (FR), TORSION		182	3-910-000-01	REFLECTOR	

ALARM AUDIO

SECTION 7 ELECTRICAL PARTS LIST

NOTE:

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts Example:
KNOB, BALANCE (WHITE) ... (RED)

↑
Parts color

↑
Cabinet's color
- Accessories and packing materials are given in the last of this parts list.

- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F : nonflammable
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA..., uPB...: μ PB...,
uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
uF : μ F
- COILS
uH : μ H

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
*	1-652-833-11	ALARM BOARD *****		C107	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
	4-017-441-01	CUSHION (B)		C108	1-126-607-11	ELECT CHIP 47uF 20% 4V	
		< CAPACITOR >		C109	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C1	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V		C110	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C2	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V		C111	1-162-965-11	CERAMIC CHIP 0.0015uF 10% 50V	
C3	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V					
		< TRANSISTOR >		C112	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
Q1	8-729-402-32	TRANSISTOR 2SD1819A-R		C113	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
Q2	8-729-230-60	TRANSISTOR 2SA1586-YG		C114	1-164-346-11	CERAMIC CHIP 1uF 16V	
Q3	8-729-402-81	TRANSISTOR XN4501		C115	1-164-677-11	CERAMIC CHIP 0.033uF 10% 16V	
Q4	8-729-403-17	TRANSISTOR XN1215		C116	1-135-151-21	TANTALUM CHIP 4.7uF 20% 4V	
		< RESISTOR >					
R1	1-216-851-11	METAL CHIP 330K 5% 1/16W		C117	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
R2	1-216-839-11	METAL CHIP 33K 5% 1/16W		C118	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	
R3	1-216-827-11	METAL CHIP 3.3K 5% 1/16W		C119	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	
R4	1-216-839-11	METAL CHIP 33K 5% 1/16W		C120	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
R6	1-216-827-11	METAL CHIP 3.3K 5% 1/16W		C121	1-107-983-11	TANTAL. CHIP 10uF 20% 2.5V	
R7	1-216-845-11	METAL CHIP 100K 5% 1/16W					
R8	1-216-845-11	METAL CHIP 100K 5% 1/16W		C122	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
R9	1-216-827-11	METAL CHIP 3.3K 5% 1/16W		C123	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
R10	1-216-839-11	METAL CHIP 33K 5% 1/16W		C124	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
*****				C125	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
*	A-3016-512-A	AUDIO BOARD, COMPLETE (23) (including ALARM BOARD) *****		C126	1-135-151-21	TANTALUM CHIP 4.7uF 20% 4V	
*	A-3016-561-A	AUDIO BOARD, COMPLETE (21) (including ALARM BOARD) *****					
	3-703-502-31	SCREW		C127	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
	3-831-441-XX	CUSHION		C130	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
	X-3363-574-1	HOLDER ASSY, JACK		C131	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
		< CAPACITOR >		C132	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C101	1-164-360-11	CERAMIC CHIP 0.1uF 16V		C133	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C102	1-164-360-11	CERAMIC CHIP 0.1uF 16V					
C103	1-135-318-11	TANTAL. CHIP 33uF 20% 4V		C134	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C104	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V		C135	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	
C106	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V		C136	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
				C137	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
				C138	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
				C139	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
				C140	1-135-070-00	TANTALUM CHIP 0.1uF 10% 35V	
				C141	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
				C142	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
				C145	1-135-318-11	TANTAL. CHIP 33uF 20% 4V	
				C146	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
				C147	1-126-246-11	ELECT CHIP 220uF 20% 4V	
				C148	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
				C149	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
				C150	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
				C151	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
				C501	1-164-360-11	CERAMIC CHIP 0.1uF 16V (23)	
				C502	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V (23)	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C503	1-164-173-11	CERAMIC CHIP	0.0039uF 10% 50V (23)	IC601	8-759-400-12	IC AN6612S	
C504	1-164-360-11	CERAMIC CHIP	0.1uF 16V (23)			< JACK >	
C505	1-135-180-21	TANTALUM CHIP	3.3uF 20% 6.3V(23)	J101	1-563-319-21	JACK (MIC PLUG IN POWER)	
C506	1-164-360-11	CERAMIC CHIP	0.1uF 16V (23)	J102	1-563-319-21	JACK (EAR)	
C507	1-164-360-11	CERAMIC CHIP	0.1uF 16V (23)			< JUMPER RESISTOR >	
C508	1-135-201-11	TANTALUM CHIP	10uF 20% 4V (23)	JR102	1-216-864-11	METAL CHIP 0 5% 1/16W	
C509	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V (23)	JR103	1-216-864-11	METAL CHIP 0 5% 1/16W (21)	
C510	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V (23)	JR104	1-216-864-11	METAL CHIP 0 5% 1/16W (21)	
C512	1-135-318-11	TANTAL. CHIP	33uF 20% 4V (23)	JR105	1-216-864-11	METAL CHIP 0 5% 1/16W (21)	
C513	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	JR201	1-216-296-11	METAL CHIP 0 5% 1/16W	
C514	1-164-360-11	CERAMIC CHIP	0.1uF 16V	JR202	1-216-864-11	METAL CHIP 0 5% 1/16W	
C515	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	JR203	1-216-864-11	METAL CHIP 0 5% 1/16W	
C516	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	JR204	1-216-864-11	METAL CHIP 0 5% 1/16W	
C517	1-135-201-11	TANTALUM CHIP	10uF 20% 4V	JR205	1-216-864-11	METAL CHIP 0 5% 1/16W	
C519	1-164-360-11	CERAMIC CHIP	0.1uF 16V (23)			< COIL >	
C520	1-126-246-11	ELECT CHIP	220uF 20% 4V (23)	L501	1-412-064-11	INDUCTOR CHIP 100uH	
C521	1-104-847-11	TANTAL. CHIP	22uF 20% 4V			< PHOTO INTERRUPTER >	
C522	1-104-847-11	TANTAL. CHIP	22uF 20% 4V	PH501	8-719-017-54	DIODE NJ5161K-F10-A	
C523	1-164-360-11	CERAMIC CHIP	0.1uF 16V (23)			< TRANSISTOR >	
C525	1-104-852-11	TANTAL. CHIP	22uF 20% 6.3V	Q101	8-729-402-32	TRANSISTOR 2SD1819A-R	
C526	1-104-852-11	TANTAL. CHIP	22uF 20% 6.3V	Q102	8-729-402-32	TRANSISTOR 2SD1819A-R	
C528	1-164-360-11	CERAMIC CHIP	0.1uF 16V (23)	Q103	8-729-402-32	TRANSISTOR 2SD1819A-R	
C601	1-135-201-11	TANTALUM CHIP	10uF 20% 4V	Q104	8-729-422-39	TRANSISTOR XN4404	
C602	1-135-201-11	TANTALUM CHIP	10uF 20% 4V	Q105	8-729-420-50	TRANSISTOR UN5215	
C603	1-104-847-11	TANTAL. CHIP	22uF 20% 4V	Q106	8-729-402-84	TRANSISTOR XN4601	
C604	1-164-005-11	CERAMIC CHIP	0.47uF 25V	Q107	8-729-402-93	TRANSISTOR UN5214	
C605	1-135-151-21	TANTALUM CHIP	4.7uF 20% 4V	Q109	8-729-230-69	TRANSISTOR 2SA1362G	
C606	1-164-346-11	CERAMIC CHIP	1uF 16V	Q110	8-729-402-32	TRANSISTOR 2SD1819A-R	
C607	1-164-346-11	CERAMIC CHIP	1uF 16V	Q501	8-729-230-60	TRANSISTOR 2SA1586-YG (23)	
		< CONNECTOR >		Q502	8-729-402-32	TRANSISTOR 2SD1819A-R (23)	
* CN101	1-750-338-11	CONNECTOR, FFC/FPC (ZIF) 12P		Q503	8-729-420-50	TRANSISTOR UN5215	
CN102	1-580-372-11	JACK, DC(POLARITY UNIFIED TYPE)(DC IN 3V)		Q504	8-729-402-81	TRANSISTOR XN4501 (23)	
		< DIODE >		Q505	8-729-402-32	TRANSISTOR 2SD1819A-R (23)	
D501	8-719-420-51	DIODE MA729		Q506	8-729-402-93	TRANSISTOR UN5214 (23)	
D502	8-719-420-51	DIODE MA729		Q507	8-729-402-96	TRANSISTOR UN5114	
D503	8-719-420-51	DIODE MA729 (23)		Q508	8-729-420-50	TRANSISTOR UN5215	
D504	8-719-404-46	DIODE MA110 (23)		Q509	8-729-420-50	TRANSISTOR UN5215	
D505	8-719-404-46	DIODE MA110		Q510	8-729-420-16	TRANSISTOR XN1214	
D506	8-719-420-51	DIODE MA729		Q511	8-729-230-60	TRANSISTOR 2SA1586-YG	
D601	8-719-420-51	DIODE MA729		Q512	8-729-402-32	TRANSISTOR 2SD1819A-R (23)	
		< IC >		Q513	8-729-426-31	TRANSISTOR XP1214	
IC101	8-752-036-39	IC CXA1347N		Q514	8-729-429-44	TRANSISTOR XP1501	
IC501	8-759-097-93	IC NJM2100V (23)		Q515	8-729-420-53	TRANSISTOR UN5115	
IC502	8-759-180-33	IC MM1210-XFF (23)		Q516	8-729-429-44	TRANSISTOR XP1501	
IC503	8-759-701-51	IC NJM2072M					
IC504	8-759-253-51	IC RH5RH301A					

AUDIO

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q517	8-729-402-96	TRANSISTOR UN5114 (23)		R139	1-216-845-11	METAL CHIP 100K 5% 1/16W	
Q518	8-729-403-17	TRANSISTOR XN1215 (23)		R140	1-216-835-11	METAL CHIP 15K 5% 1/16W	
Q520	8-729-402-93	TRANSISTOR UN5214		R141	1-216-792-11	METAL GLAZE 3.9 5% 1/16W	
Q521	8-729-402-32	TRANSISTOR 2SD1819A-R					
Q522	8-729-402-96	TRANSISTOR UN5114		R142	1-216-792-11	METAL GLAZE 3.9 5% 1/16W	
Q601	8-729-230-60	TRANSISTOR 2SA1586-YG		R143	1-216-845-11	METAL CHIP 100K 5% 1/16W	
Q602	8-729-420-50	TRANSISTOR UN5215		R144	1-216-841-11	METAL CHIP 47K 5% 1/16W	
Q603	8-729-402-32	TRANSISTOR 2SD1819A-R		R145	1-216-814-11	METAL CHIP 270 5% 1/16W	
Q605	8-729-420-50	TRANSISTOR UN5215		R152	1-216-801-11	METAL CHIP 22 5% 1/16W	
Q606	8-729-420-53	TRANSISTOR UN5115		R153	1-216-833-11	METAL CHIP 10K 5% 1/16W	
Q607	8-729-426-36	TRANSISTOR XP1215		R154	1-216-809-11	METAL CHIP 100 5% 1/16W	
Q608	8-729-420-50	TRANSISTOR UN5215		R155	1-216-819-11	METAL CHIP 680 5% 1/16W	
Q610	8-729-402-93	TRANSISTOR UN5214		R156	1-216-809-11	METAL CHIP 100 5% 1/16W	
Q611	8-729-101-07	TRANSISTOR 2SB798-DL		R157	1-216-833-11	METAL CHIP 10K 5% 1/16W	
Q612	8-729-230-60	TRANSISTOR 2SA1586-YG		R158	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
Q613	8-729-420-50	TRANSISTOR UN5215		R159	1-216-812-11	METAL CHIP 180 5% 1/16W	
< RESISTOR >				R160	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R101	1-216-824-11	METAL CHIP 1.8K 5% 1/16W		R161	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R102	1-216-830-11	METAL CHIP 5.6K 5% 1/16W		R501	1-216-825-11	METAL CHIP 2.2K 5% 1/16W (23)	
R103	1-216-815-11	METAL CHIP 330 5% 1/16W		R502	1-216-845-11	METAL CHIP 100K 5% 1/16W (23)	
R104	1-216-837-11	METAL CHIP 22K 5% 1/16W		R503	1-216-845-11	METAL CHIP 100K 5% 1/16W (23)	
R105	1-216-821-11	METAL CHIP 1K 5% 1/16W		R504	1-216-837-11	METAL CHIP 22K 5% 1/16W (23)	
R106	1-216-833-11	METAL CHIP 10K 5% 1/16W		R505	1-216-853-11	METAL CHIP 470K 5% 1/16W (23)	
R108	1-216-809-11	METAL CHIP 100 5% 1/16W (23)		R506	1-216-841-11	METAL CHIP 47K 5% 1/16W (23)	
R109	1-216-808-11	METAL CHIP 82 5% 1/16W		R507	1-216-827-11	METAL CHIP 3.3K 5% 1/16W (23)	
R110	1-216-809-11	METAL CHIP 100 5% 1/16W		R508	1-218-344-11	METAL CHIP 7.5K 0.50% 1/16W (23)	
R112	1-216-841-11	METAL CHIP 47K 5% 1/16W		R509	1-218-716-11	METAL CHIP 10K 0.50% 1/16W (23)	
R113	1-216-821-11	METAL CHIP 1K 5% 1/16W		R510	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R114	1-218-344-11	METAL GLAZE 7.5K 5% 1/16W		R511	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R115	1-216-817-11	METAL CHIP 470 5% 1/16W		R512	1-216-804-11	METAL CHIP 39 5% 1/16W (23)	
R116	1-216-851-11	METAL CHIP 330K 5% 1/16W		R513	1-216-851-11	METAL CHIP 330K 5% 1/16W (23)	
R117	1-218-482-11	METAL GLAZE 430 5% 1/16W		R514	1-216-833-11	METAL CHIP 10K 5% 1/16W (23)	
R118	1-216-828-11	METAL CHIP 3.9K 5% 1/16W		R515	1-216-833-11	METAL CHIP 10K 5% 1/16W (23)	
R119	1-216-841-11	METAL CHIP 47K 5% 1/16W		R516	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R120	1-216-817-11	METAL CHIP 470 5% 1/16W		R517	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R121	1-216-817-11	METAL CHIP 470 5% 1/16W		R519	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R122	1-216-825-11	METAL CHIP 2.2K 5% 1/16W		R520	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R123	1-216-825-11	METAL CHIP 2.2K 5% 1/16W		R521	1-216-846-11	METAL CHIP 120K 5% 1/16W	
R124	1-216-801-11	METAL CHIP 22 5% 1/16W		R522	1-216-817-11	METAL CHIP 470 5% 1/16W	
R125	1-216-831-11	METAL CHIP 6.8K 5% 1/16W		R523	1-216-809-11	METAL CHIP 100 5% 1/16W (23)	
R126	1-216-828-11	METAL CHIP 3.9K 5% 1/16W		R524	1-216-823-11	METAL CHIP 1.5K 5% 1/16W (23)	
R127	1-216-841-11	METAL CHIP 47K 5% 1/16W		R525	1-216-818-11	METAL CHIP 560 5% 1/16W (23)	
R128	1-216-833-11	METAL CHIP 10K 5% 1/16W		R526	1-216-852-11	METAL CHIP 390K 5% 1/16W (23)	
R129	1-216-833-11	METAL CHIP 10K 5% 1/16W		R527	1-216-853-11	METAL CHIP 470K 5% 1/16W (23)	
R130	1-216-841-11	METAL CHIP 47K 5% 1/16W		R528	1-216-845-11	METAL CHIP 100K 5% 1/16W (23)	
R131	1-216-827-11	METAL CHIP 3.3K 5% 1/16W		R529	1-216-843-11	METAL CHIP 68K 5% 1/16W (23)	
R132	1-216-821-11	METAL CHIP 1K 5% 1/16W		R530	1-216-819-11	METAL CHIP 680 5% 1/16W	
R133	1-216-841-11	METAL CHIP 47K 5% 1/16W		R531	1-216-821-11	METAL CHIP 1K 5% 1/16W (23)	
R138	1-216-134-00	METAL CHIP 2.2 5% 1/8W		R532	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
				R533	1-216-838-11	METAL CHIP 27K 5% 1/16W	
				R535	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R536	1-216-833-11	METAL CHIP	10K 5% 1/16W	S601	1-570-087-11	SWITCH, SLIDE (FAST PB)	
R537	1-216-845-11	METAL CHIP	100K 5% 1/16W	S602	1-571-277-31	SWITCH, SLIDE (TAPE SPEED) (23)	
R538	1-216-845-11	METAL CHIP	100K 5% 1/16W			< TRANSFORMER >	
R539	1-216-845-11	METAL CHIP	100K 5% 1/16W	T101	1-433-251-00	TRANSFORMER, BIAS OSCILLATOR	
R540	1-216-833-11	METAL CHIP	10K 5% 1/16W			< THERMISTOR >	
R541	1-216-839-11	METAL CHIP	33K 5% 1/16W	TH601	1-809-545-11	THERMISTOR	
R542	1-216-833-11	METAL CHIP	10K 5% 1/16W			< THERMISTOR(POSITIVE) >	
R543	1-216-839-11	METAL CHIP	33K 5% 1/16W	THP601	1-809-342-11	THERMISTOR, POSITIVE	
R544	1-216-833-11	METAL CHIP	10K 5% 1/16W	*****			
R545	1-216-843-11	METAL CHIP	68K 5% 1/16W		A-3016-511-A	LCD BOARD, COMPLETE	
R546	1-216-821-11	METAL CHIP	1K 5% 1/16W (23)			*****	
R547	1-216-833-11	METAL CHIP	10K 5% 1/16W (23)	*	1-537-724-11	CONDUCTIVE BOARD, CONNECTION	
R548	1-218-883-11	METAL CHIP	33K 0.50% 1/16W (23)		1-652-024-11	PC BOARD, FLEXIBLE BOARD	
R549	1-218-717-11	METAL CHIP	11K 0.50% 1/16W (23)		3-911-887-01	HOLDER, LCD	
R550	1-216-845-11	METAL CHIP	100K 5% 1/16W (23)			< CAPACITOR >	
R551	1-216-833-11	METAL CHIP	10K 5% 1/16W	C701	1-164-360-11	CERAMIC CHIP 0.1uF	16V
R602	1-216-833-11	METAL CHIP	10K 5% 1/16W	C702	1-164-360-11	CERAMIC CHIP 0.1uF	16V
R603	1-216-833-11	METAL CHIP	10K 5% 1/16W	C703	1-164-677-11	CERAMIC CHIP 0.033uF	10% 16V
R604	1-216-851-11	METAL CHIP	330K 5% 1/16W	C704	1-164-245-11	CERAMIC CHIP 0.015uF	10% 25V
R605	1-216-839-11	METAL CHIP	33K 5% 1/16W	C705	1-164-245-11	CERAMIC CHIP 0.015uF	10% 25V
R606	1-216-845-11	METAL CHIP	100K 5% 1/16W			< DIODE >	
R607	1-216-801-11	METAL CHIP	22 5% 1/16W	D701	8-719-991-75	DIODE RB425D	
R608	1-216-838-11	METAL CHIP	27K 5% 1/16W	D702	8-719-991-75	DIODE RB425D	
R615	1-216-845-11	METAL CHIP	100K 5% 1/16W	D703	8-719-047-19	LED GL8PR29 (DICT/BATT)	
R616	1-216-843-11	METAL CHIP	68K 5% 1/16W	D704	8-719-422-37	DIODE MA8051	
R618	1-216-833-11	METAL CHIP	10K 5% 1/16W			< IC >	
R619	1-216-814-11	METAL CHIP	270 5% 1/16W	IC701	8-759-276-81	IC BU2456-23	
R620	1-216-827-11	METAL CHIP	3.3K 5% 1/16W			< LIQUID CRYSTAL DISPLAY >	
R621	1-216-789-11	METAL CHIP	2.2 5% 1/16W	LCD701	1-810-464-11	DISPLAY PANEL, LIQUID CRYSTAL	
R622	1-216-836-11	METAL CHIP	18K 5% 1/16W			< TRANSISTOR >	
R623	1-216-832-11	METAL CHIP	8.2K 5% 1/16W	Q701	8-729-402-32	TRANSISTOR 2SD1819A-R	
R624	1-216-829-11	METAL CHIP	4.7K 5% 1/16W (23)	Q702	8-729-230-60	TRANSISTOR 2SA1586-YG	
R625	1-218-292-11	METAL GLAZE	20K 5% 1/16W (23)	Q703	8-729-402-32	TRANSISTOR 2SD1819A-R	
R626	1-216-833-11	METAL CHIP	10K 5% 1/16W	Q704	8-729-402-32	TRANSISTOR 2SD1819A-R	
		< VARIABLE RESISTOR >		Q705	8-729-230-60	TRANSISTOR 2SA1586-YG	
RV101	1-223-510-11	RES, VAR, CARBON 10K/10K (VOLUME)		Q706	8-729-402-32	TRANSISTOR 2SD1819A-R	
RV601	1-238-091-11	RES, ADJ, CERMET 22K		Q707	8-729-402-32	TRANSISTOR 2SD1819A-R	
RV602	1-238-090-11	RES, ADJ, CERMET 10K (23)		Q708	8-729-230-60	TRANSISTOR 2SA1586-YG	
		< SWITCH >		Q709	8-729-402-32	TRANSISTOR 2SD1819A-R	
S101	1-572-039-11	SWITCH, SLIDE (STOP, DICT, LISTEN)					
S102	1-572-288-11	SWITCH, PUSH (POWER)					
S103	1-571-275-31	SWITCH, SLIDE (MIC SENS)					
S401	1-572-288-11	SWITCH, PUSH (BACK SPACE)					
S402	1-572-288-11	SWITCH, PUSH (FF/BACK SPACE)					
S501	1-570-397-11	SWITCH, SLIDE (CUE/REVIEW)					
S502	1-572-263-31	SWITCH, SLIDE (LOCK)					
S503	1-570-204-21	SWITCH, KEY BOARD (E-INDEX) (23)					
S504	1-571-275-31	SWITCH, SLIDE (VOR)					

LCD

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q710	8-729-230-60	TRANSISTOR	2SA1586-YG	*****			
Q711	8-729-420-44	TRANSISTOR	UN5210	MISCELLANEOUS			
Q712	8-729-420-44	TRANSISTOR	UN5210	*****			
Q713	8-729-420-44	TRANSISTOR	UN5210				
Q714	8-729-420-44	TRANSISTOR	UN5210	HE901 8-825-779-41 HEAD, ERASE EBF5-36S			
Q715	8-729-420-44	TRANSISTOR	UN5210	HRP901 1-500-126-11 HEADMAGNETIC (RECORD/PLAYBACK)			
< RESISTOR >				M901 1-541-921-11 MOTOR			
R701	1-216-853-11	METAL CHIP	470K 5% 1/16W	MIC901 1-542-080-11 MICROPHONE, BUILT-IN			
R702	1-216-853-11	METAL CHIP	470K 5% 1/16W	SP901 1-504-294-11 SPEAKER (3.6CM)			
R703	1-216-845-11	METAL CHIP	100K 5% 1/16W	*****			
R704	1-216-845-11	METAL CHIP	100K 5% 1/16W	ACCESSORIES & PACKING MATERIALS			
R705	1-216-847-11	METAL CHIP	150K 5% 1/16W	*****			
R706	1-216-851-11	METAL CHIP	330K 5% 1/16W	3-758-326-11 MANUAL, INSTRUCTION			
R707	1-216-851-11	METAL CHIP	330K 5% 1/16W	(ENGLISH, FRENCH, GERMAN, DUTCH) (23:Canadian, AEP, UK)			
R708	1-216-853-11	METAL CHIP	470K 5% 1/16W	3-758-326-21 MANUAL, INSTRUCTION (ENGLISH) (21/23:US)			
R709	1-216-853-11	METAL CHIP	470K 5% 1/16W	3-909-958-01 CASE, CARRYING (23)			
R710	1-216-845-11	METAL CHIP	100K 5% 1/16W	* 3-911-190-01 INDIVIDUAL CARTON (23)			
R711	1-216-845-11	METAL CHIP	100K 5% 1/16W	* 3-911-191-01 CUSHION			
R712	1-216-847-11	METAL CHIP	150K 5% 1/16W	* 3-911-716-01 INDIVIDUAL CARTON (21)			
R713	1-216-851-11	METAL CHIP	330K 5% 1/16W				
R714	1-216-851-11	METAL CHIP	330K 5% 1/16W				
R715	1-216-853-11	METAL CHIP	470K 5% 1/16W				
R716	1-216-853-11	METAL CHIP	470K 5% 1/16W				
R717	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R718	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R719	1-216-847-11	METAL CHIP	150K 5% 1/16W				
R720	1-216-851-11	METAL CHIP	330K 5% 1/16W				
R721	1-216-851-11	METAL CHIP	330K 5% 1/16W				
R722	1-216-857-11	METAL CHIP	1M 5% 1/16W				
R723	1-216-857-11	METAL CHIP	1M 5% 1/16W				
R724	1-216-857-11	METAL CHIP	1M 5% 1/16W				
R725	1-216-857-11	METAL CHIP	1M 5% 1/16W				
R726	1-216-857-11	METAL CHIP	1M 5% 1/16W				
R727	1-216-857-11	METAL CHIP	1M 5% 1/16W				
R728	1-216-857-11	METAL CHIP	1M 5% 1/16W				
R729	1-216-857-11	METAL CHIP	1M 5% 1/16W				
R730	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R731	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R732	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R733	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R734	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R735	1-216-845-11	METAL CHIP	100K 5% 1/16W				
< SWITCH >							
S701	1-692-878-11	SWITCH, KEY BOARD (COUNTER RESET)					
< VIBRATOR >							
X701	1-577-306-11	OSCILLATOR, CERAMIC (1MHz)					

BM-21/23

SONY®

SERVICE MANUAL

*US Model
AEP Model*

BM-21/23

Canadian Model

UK Model

BM-23

SUPPLEMENT-1

File this supplement with the Service Manual.
(Printed wiring boards only are shown.)

Suffix of board parts number of AUDIO and LCD boards is changed.

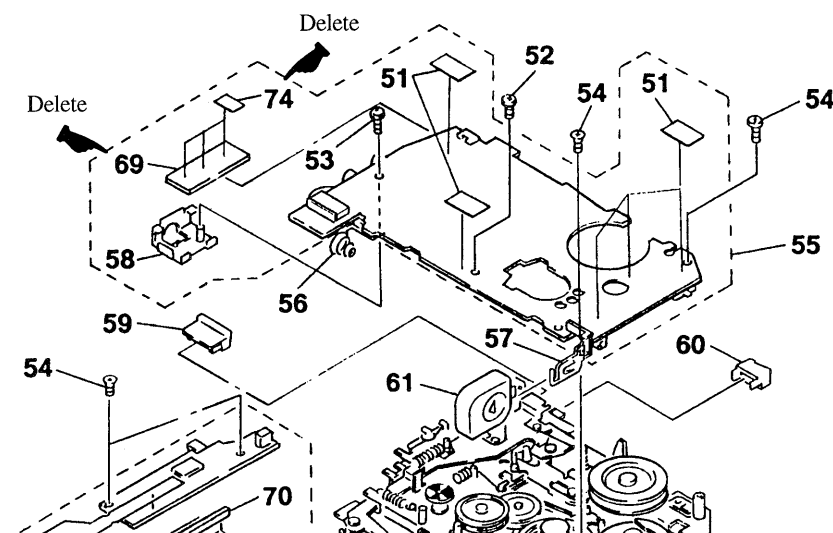
AUDIO BOARD : 1-651-430-**11** → 1-651-430-**13**
LCD BOARD : 1-651-429-**11** → 1-651-429-**13**

• Content of main change

The ALARM board (1-652-833-11) is unified into the AUDIO board.

(Page 23)

6-2. PC BOARD SECTION



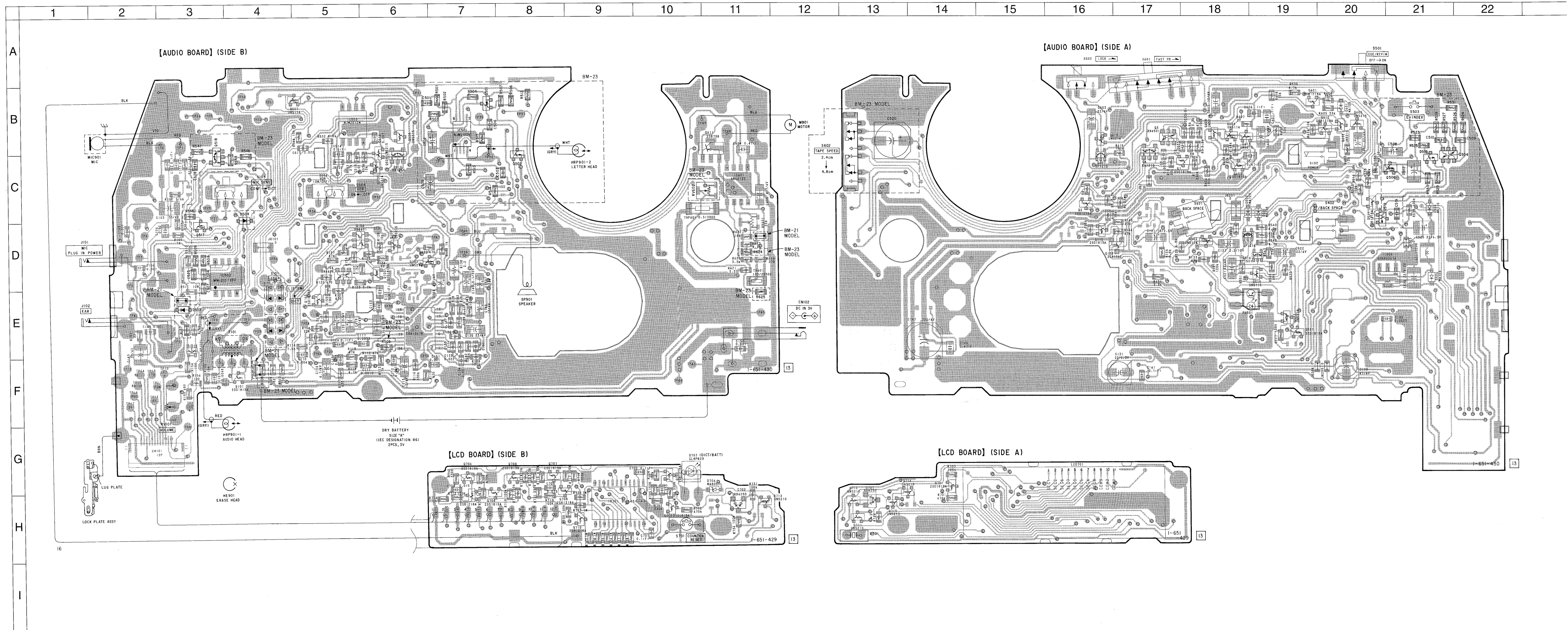
		AUDIO BOARD 1-651-430	
		FORMER (– 11)	NEW (– 13)
* 69	ALARM BOARD	1-652-833-11	_____
74	CUSHION (B)	4-017-441-01	_____

PRINTED WIRING BOARD

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D501	C-19	Q507	B-5
D502	C-18	Q508	B-6
D503	E-3	Q509	C-7
D504	C-4	Q510	C-6
D505	C-21	Q511	C-20
D506	D-21	Q512	C-20
D507	C-20	Q513	D-18
D601	B-20	Q514	D-18
D701	G-13	Q515	D-19
D702	G-11	Q516	E-3
D704	G-11	Q517	D-3
		Q518	B-3
IC101	E-6	Q520	C-6
IC501	B-7	Q521	E-19
IC502	D-4	Q522	D-18
IC503	B-5	Q601	B-19
IC504	D-21	Q602	B-20
IC601	C-11	Q603	C-18
IC701	H-9	Q605	B-20
		Q606	B-18
PH501	E-19	Q607	C-16
		Q608	B-18
Q1	C-18	Q610	B-16
Q2	C-16	Q611	B-11
Q3	B-17	Q612	B-20
Q4	C-17	Q613	B-18
Q101	F-4	Q701	G-14
Q102	D-6	Q702	G-10
Q103	E-5	Q703	H-10
Q104	D-5	Q704	H-7
Q105	D-6	Q705	H-7
Q106	D-5	Q706	G-7
Q107	D-6	Q707	G-8
Q109	D-16	Q708	H-8
Q110	D-16	Q709	G-8
Q501	B-7	Q710	H-9
Q502	C-8	Q711	H-13
Q503	E-19	Q712	G-13
Q504	B-22	Q713	H-11
Q505	B-21	Q714	G-13
Q506	C-21	Q715	H-13

Note :
• — : Parts extracted from the conductor side.
• ○ : Through hole.
• — : Pattern on the side which enable seeing.
(The other layer's patterns are not indicated.)



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SERVICE MANUAL

Ver. 1.1 2005.08

US Model

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Canadian Model

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AEP Model

BM-21/23

UK Model

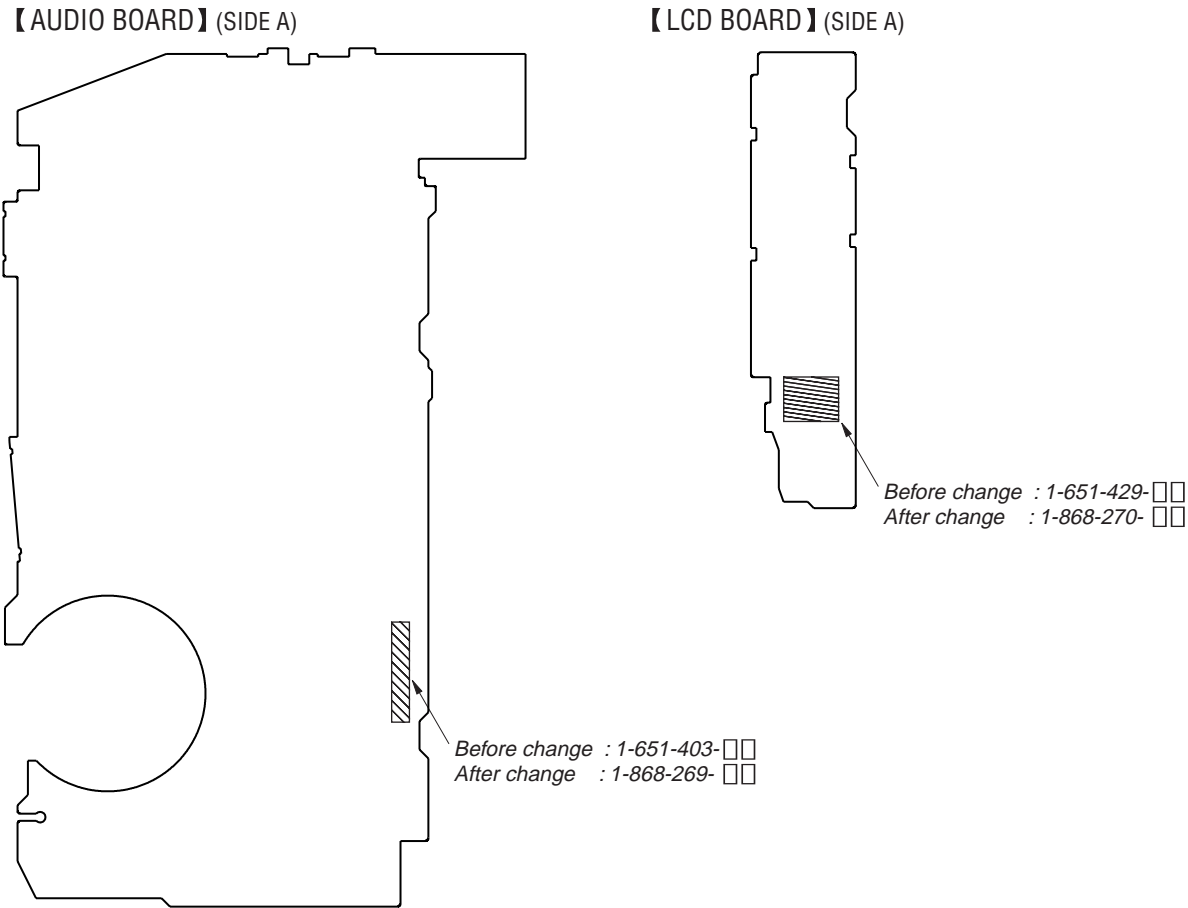
BM-23

SUPPLEMENT-2

Subject: Addition of BM-23 environmental measure model (only for AEP model)

BM-23 environmental measure model (only for AEP model)
This supplement-2 describes disassembly, mechanical adjustments, electrical adjustments, diagrams, exploded views and electrical parts list about BM-23 environmental measure model.
Refer to original service manual (9-959-363-1□) for other information.

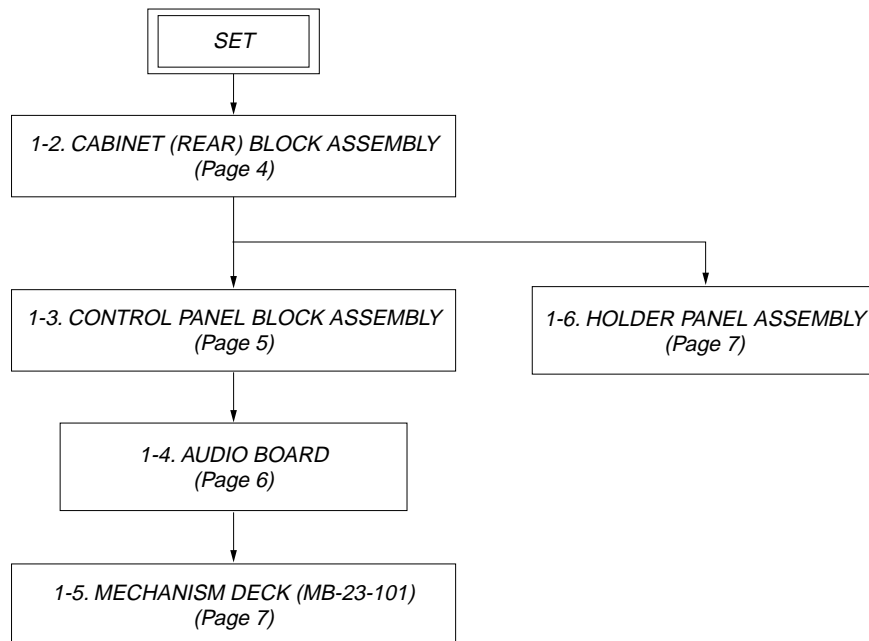
• How to distinguish



SECTION 1 DISASSEMBLY

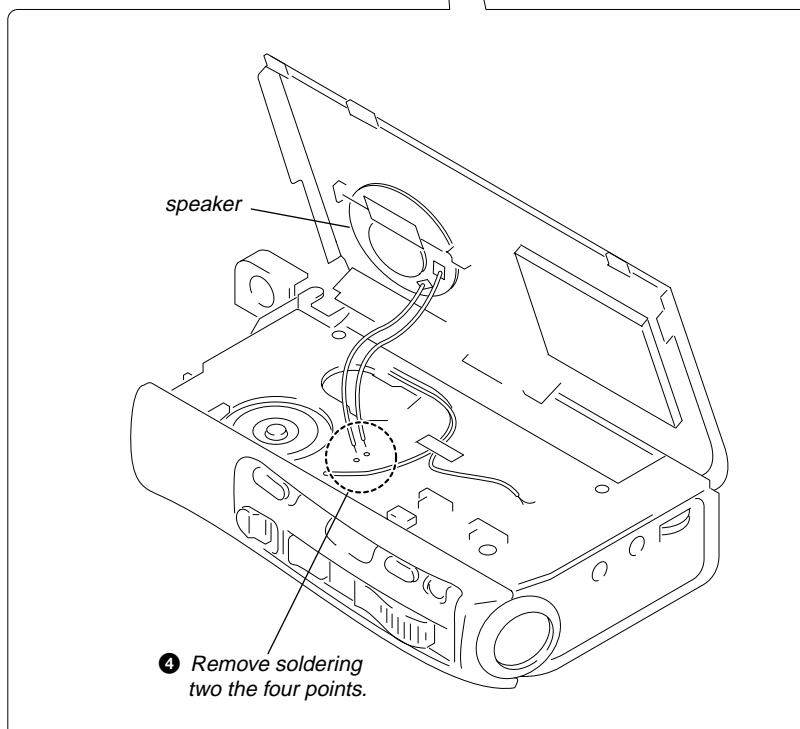
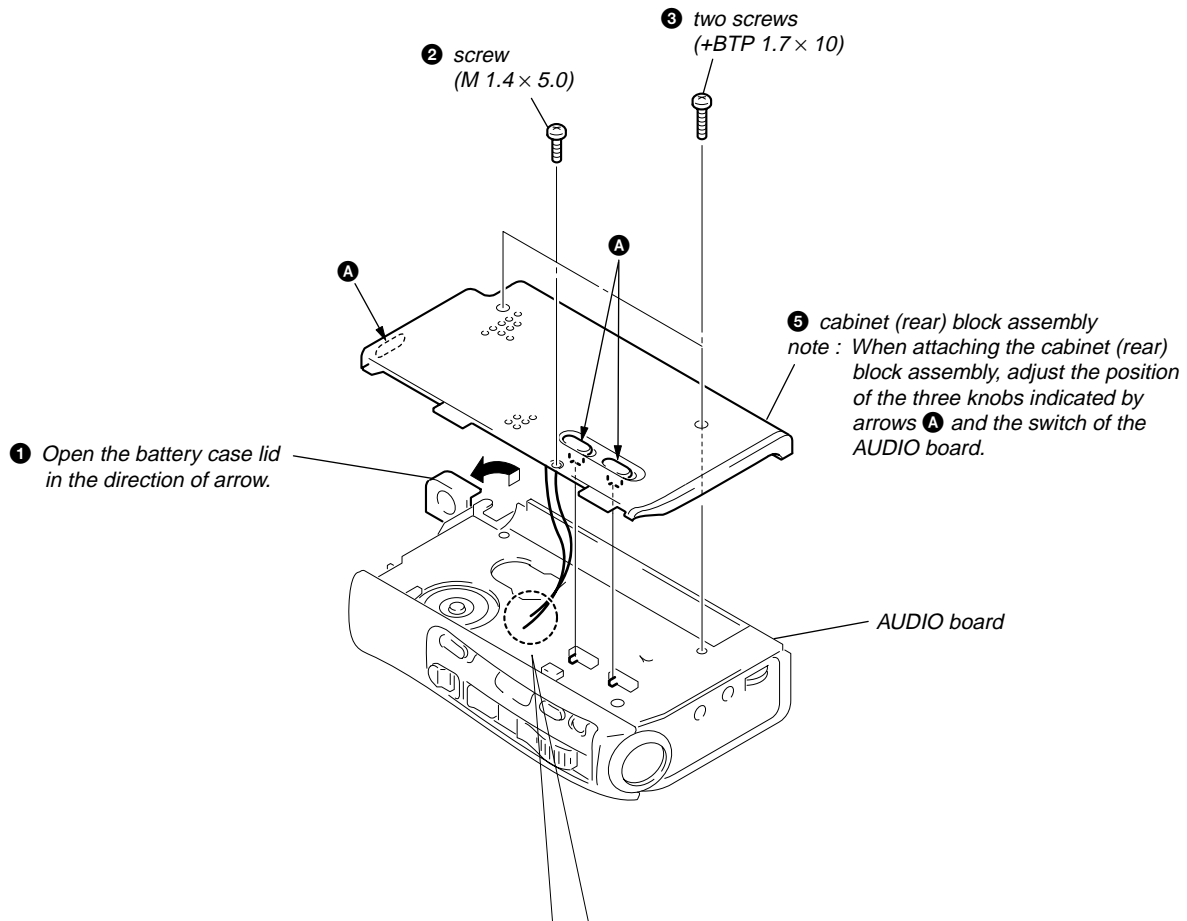
1-1. DISASSEMBLY FLOW

- This set can be disassembled in the order shown below.

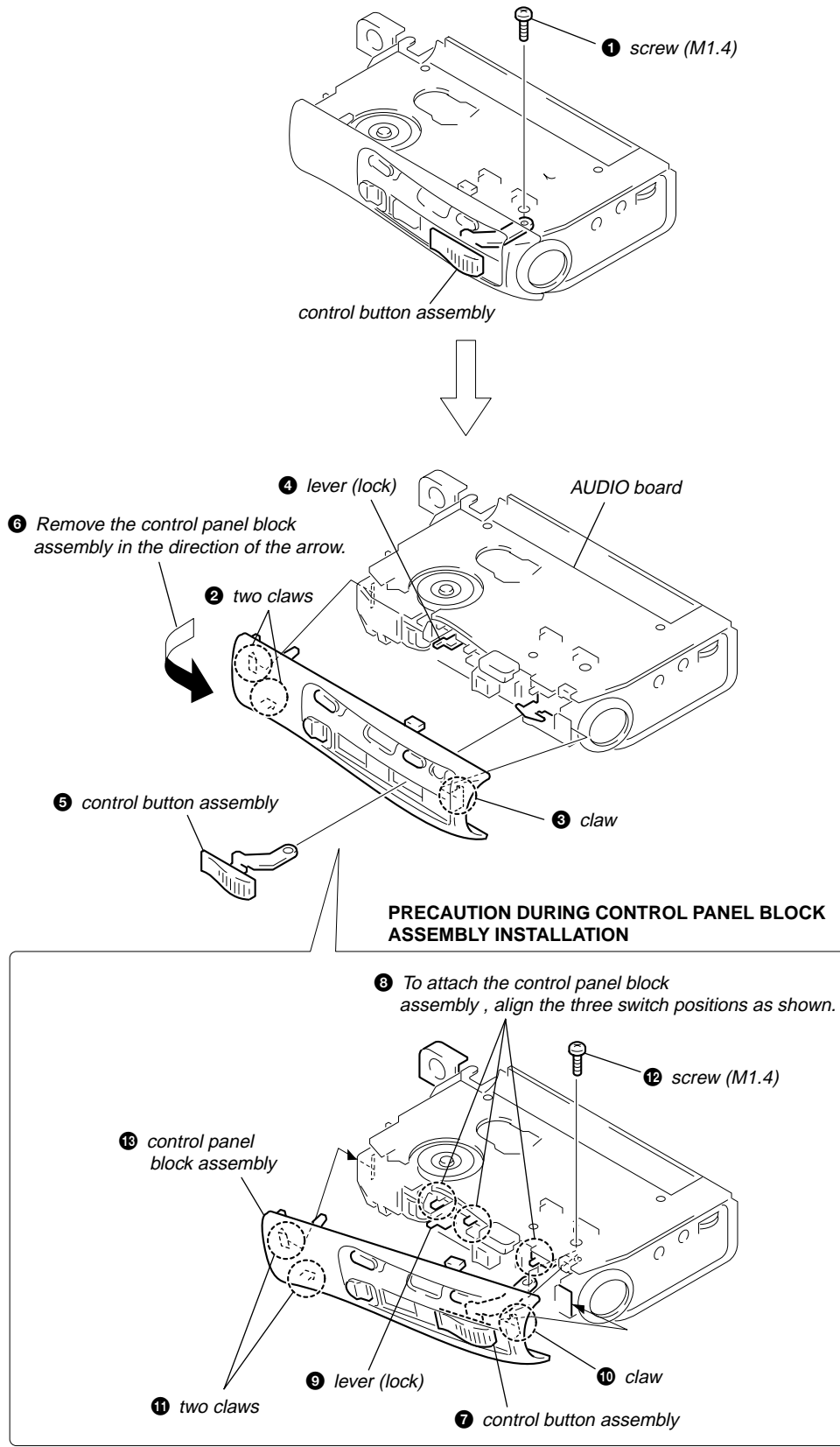


Note: Follow the disassembly procedure in the numerical order given.

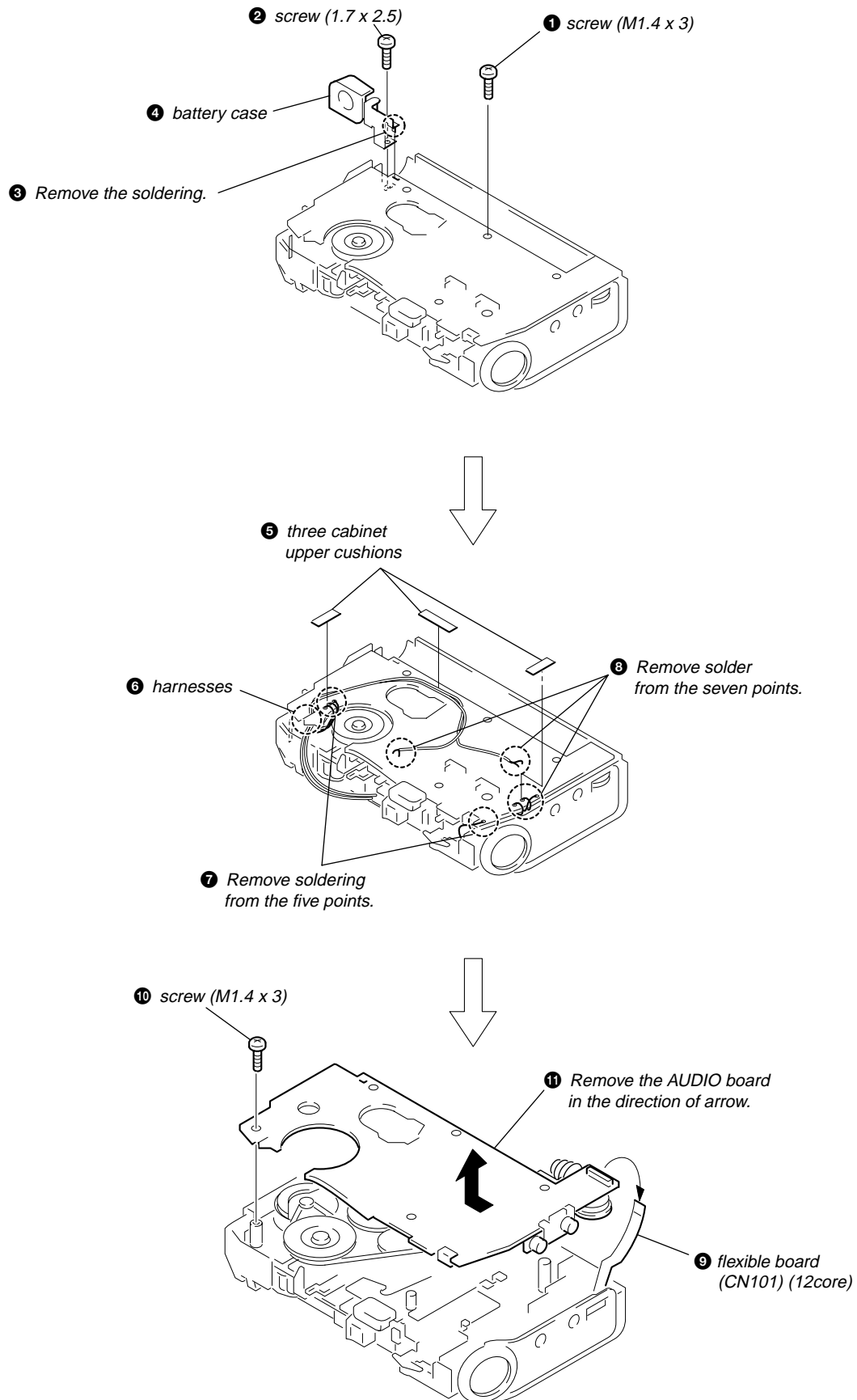
1-2. CABINET (REAR) BLOCK ASSEMBLY



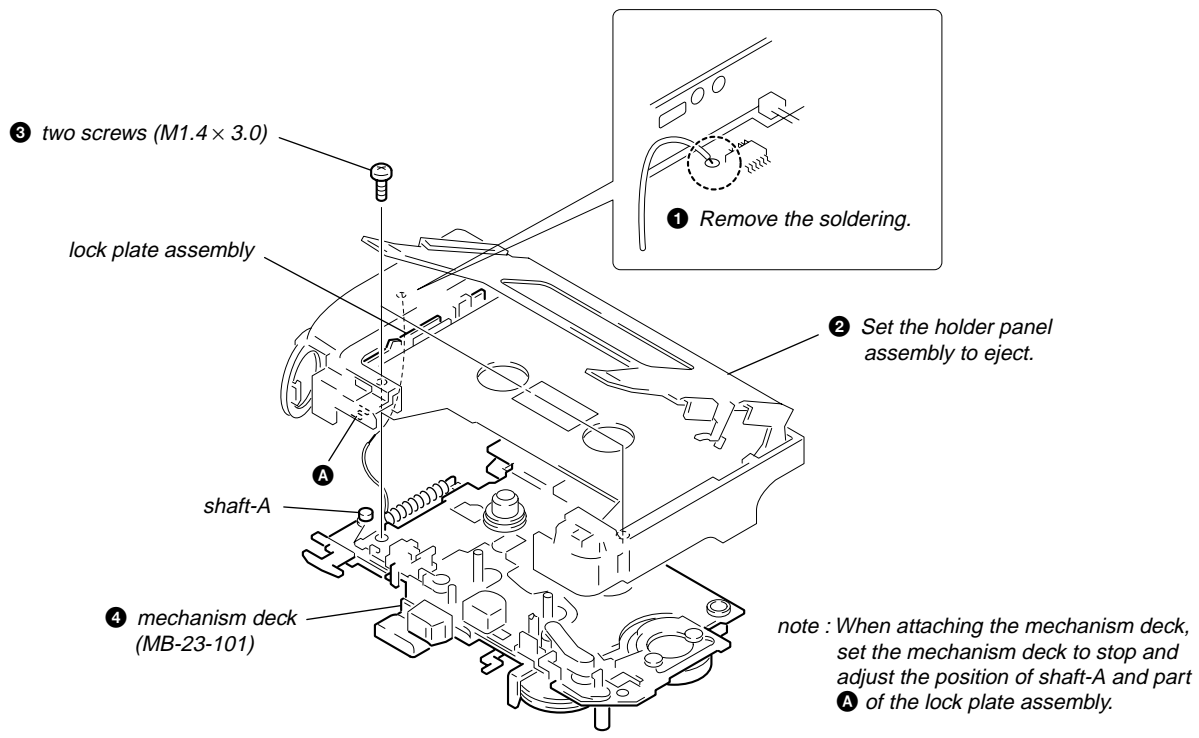
1-3. CONTROL PANEL BLOCK ASSEMBLY



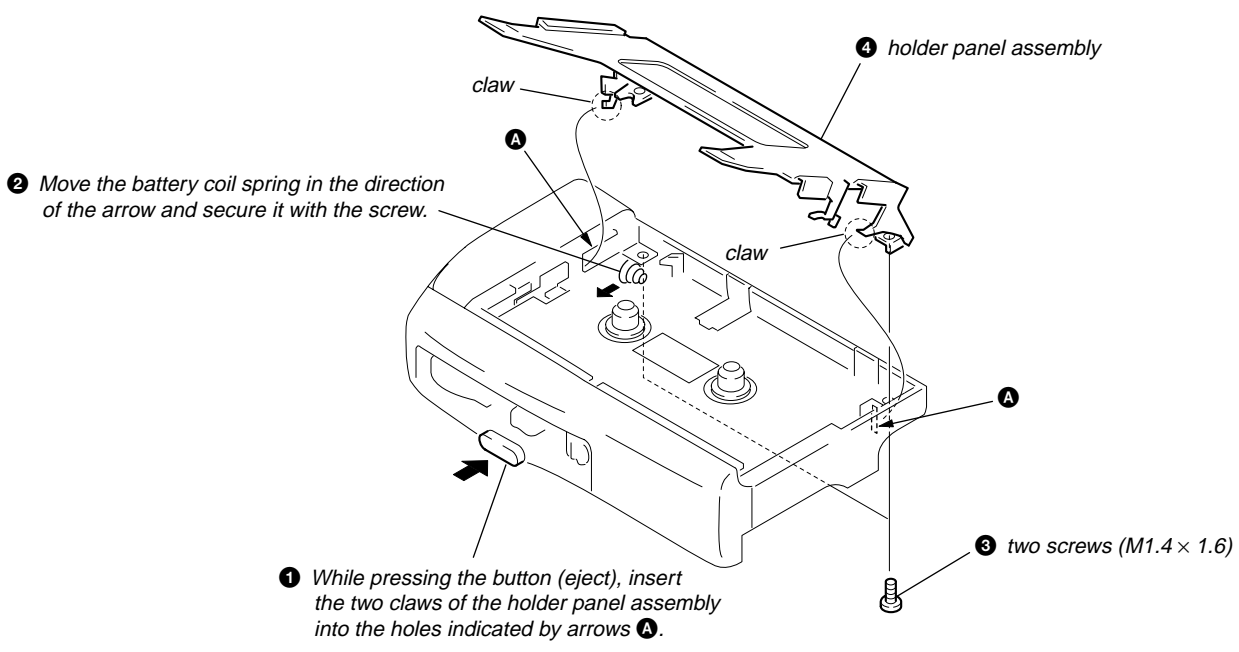
1-4. AUDIO BOARD



1-5. MECHANISM DECK (MB-23-101)



1-6. HOLDER PANEL ASSEMBLY



SECTION 2 MECHANICAL ADJUSTMENTS

PRECAUTION

- Clean the following parts with a denatured-alcohol-moistened swab :

playback head	rubber belts
capstan	idlers
pinch roller	
- Demagnetize the playback head with a head demagnetizer.
- Do not use a magnetized screwdriver for the adjustments.
- The adjustments should be performed with the rated power supply voltage (3V) unless otherwise noted.

• Torque Measurement

Mode	Torque Meter	Meter Reading
FWD	CQ-102C	2.06 – 3.72 mN•m (21 – 38 g•cm) (0.30 – 0.52 oz•inch)
FWD Back Tension		0.05 – 0.29 mN•m (0.5 – 3 g•cm) (0.01 – 0.04 oz•inch)
REV	CQ-102RC	2.06 – 3.72 mN•m (21 – 38 g•cm) (0.30 – 0.52 oz•inch)
REV Back Tension		0.05 – 0.29 mN•m (0.5 – 3 g•cm) (0.01 – 0.04 oz•inch)
FF	CQ-201B	more than 60 g•cm (more than 0.84 oz•inch)
REW		

• Tape Pulling Force Measurement

Mode	Torque Meter	Meter Reading
FF	CQ-403A	more than 40 g (more than 1.42 oz)
REW	CQ-403R	

SECTION 3 ELECTRICAL ADJUSTMENTS

PRECAUTION

- Power supply voltage : 3V

Test Tape

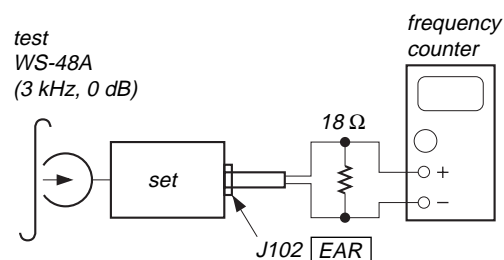
Type	Signal	Used for
WS-48A	3 kHz, 0 db	Tape Speed Adjustment

Tape Speed 4.8cm/s Adjustment

Switch position

TAPE SPEED Switch : 4.8 cm

Procedure:

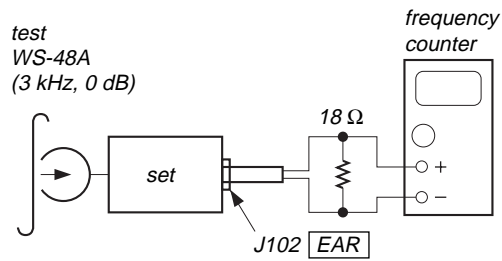


- Play back WS-48A (tape center portion) in FWD mode. Adjust the RV601 so that the frequency counter reads $2,980 \pm 30$ Hz.
- Play back WS-48A (tape center portion) in REV mode. Confirm that the reading of frequency counter is within 2.5 % from the reading in step 1.

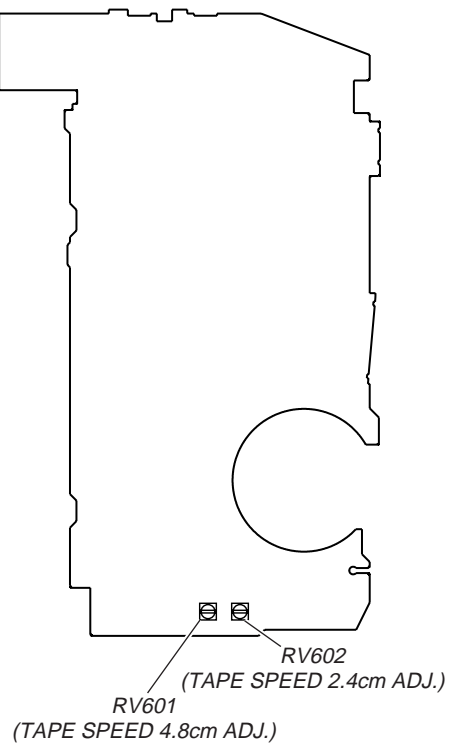
Tape Speed 2.4cm/s Adjustment

Switch position

TAPE SPEED Switch : 2.4 cm

Procedure:

1. Play back WS-48A (tape center portion) in FWD mode.
Adjust the RV602 so that the frequency counter reads $1,490 \pm 15$ Hz.
2. Play back WS-48A (tape center portion) in REV mode.
Confirm that the reading of frequency counter is within 2.5 % from the reading in step 1.

Adjustment Parts Location Diagram :**【 AUDIO BOARD 】 (SIDE B)**

SECTION 4
DIAGRAMS

• Note for Printed Wiring Boards and Schematic Diagrams

Note on Printed Wiring Board:

- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : Pattern from the side which enables seeing.

Caution:
Pattern face side: Parts on the pattern face side seen from (Side A) the pattern face are indicated.
Parts face side: Parts on the parts face side seen from (Side B) the parts face are indicated.

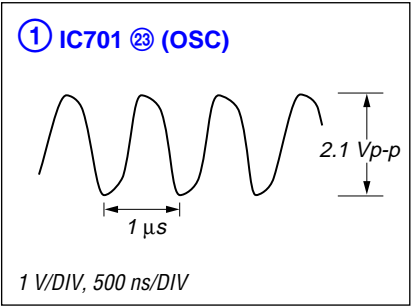
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. (p: pF) 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- ⎓ : nonflammable resistor.
- : panel designation.
- ▭ : adjustment for repair.

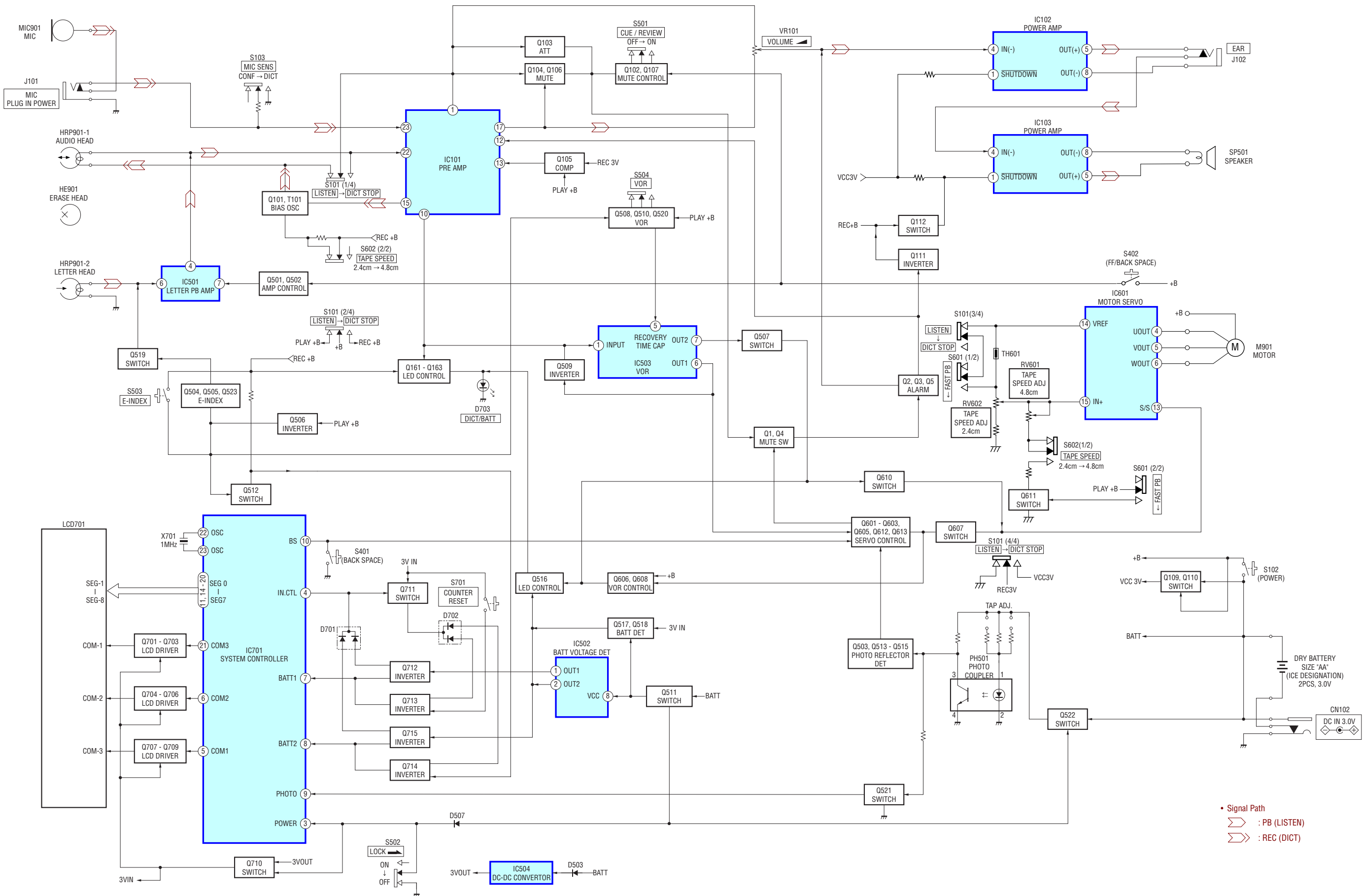
Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.	Note: Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
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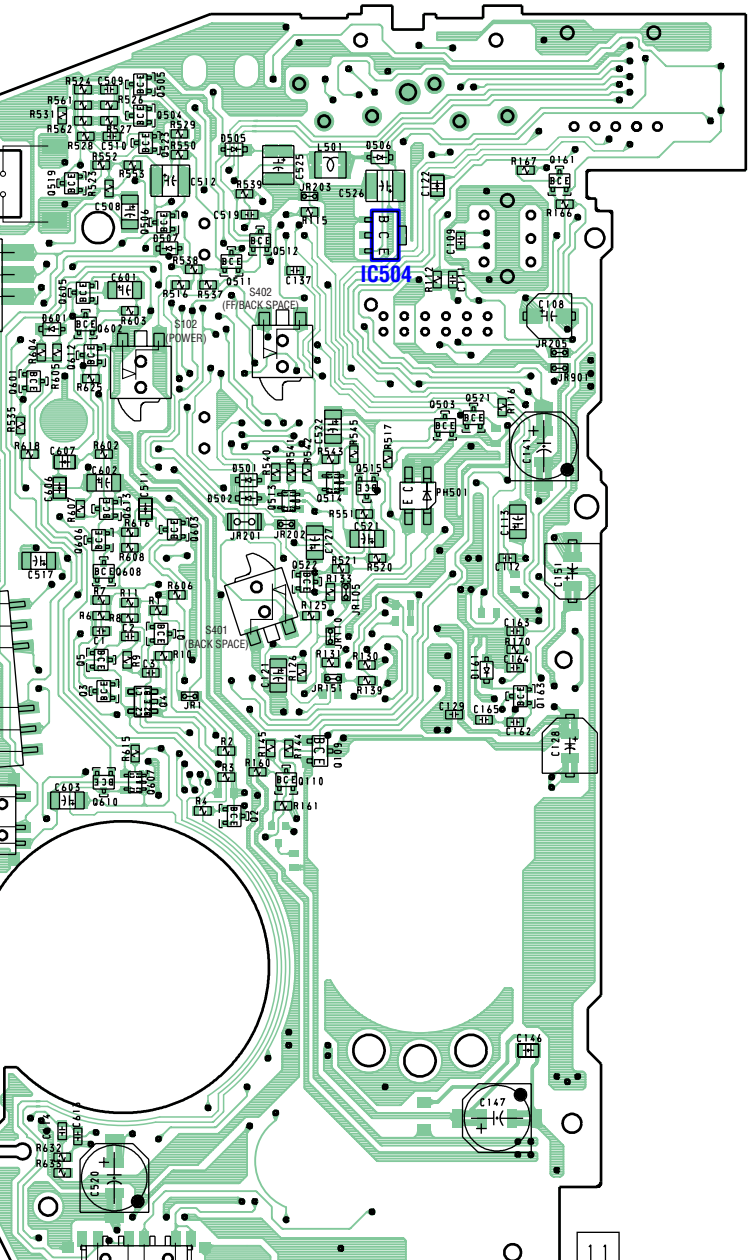
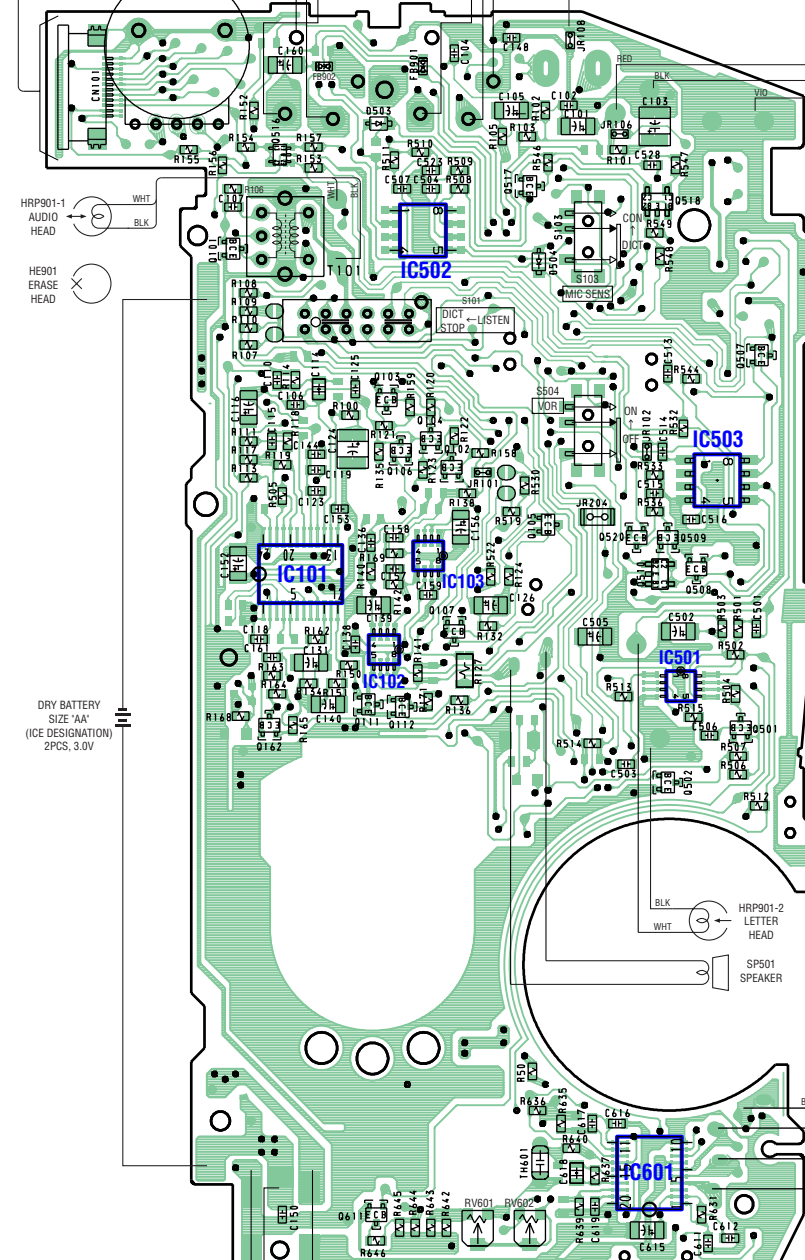
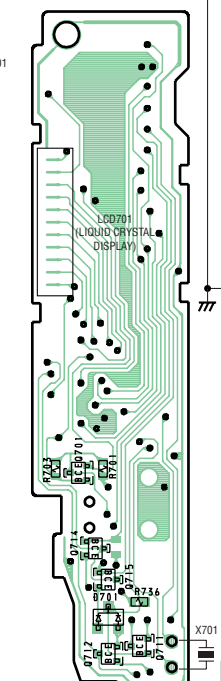
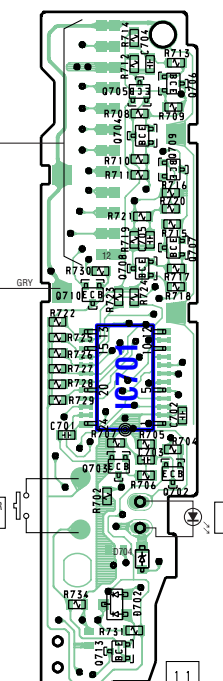
- : B+ Line.
- Total current is measured with no cassette installed.
- Power voltage is dc 3V and fed with regulated dc power supply from battery terminal.
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- No mark : PB (LISTEN)
() : REC (DICT)
- Circled numbers refer to waveforms.
- Signal path.
Σ : PB (LISTEN)
Σ : REC (DICT)

• Waveforms
– LCD Board –



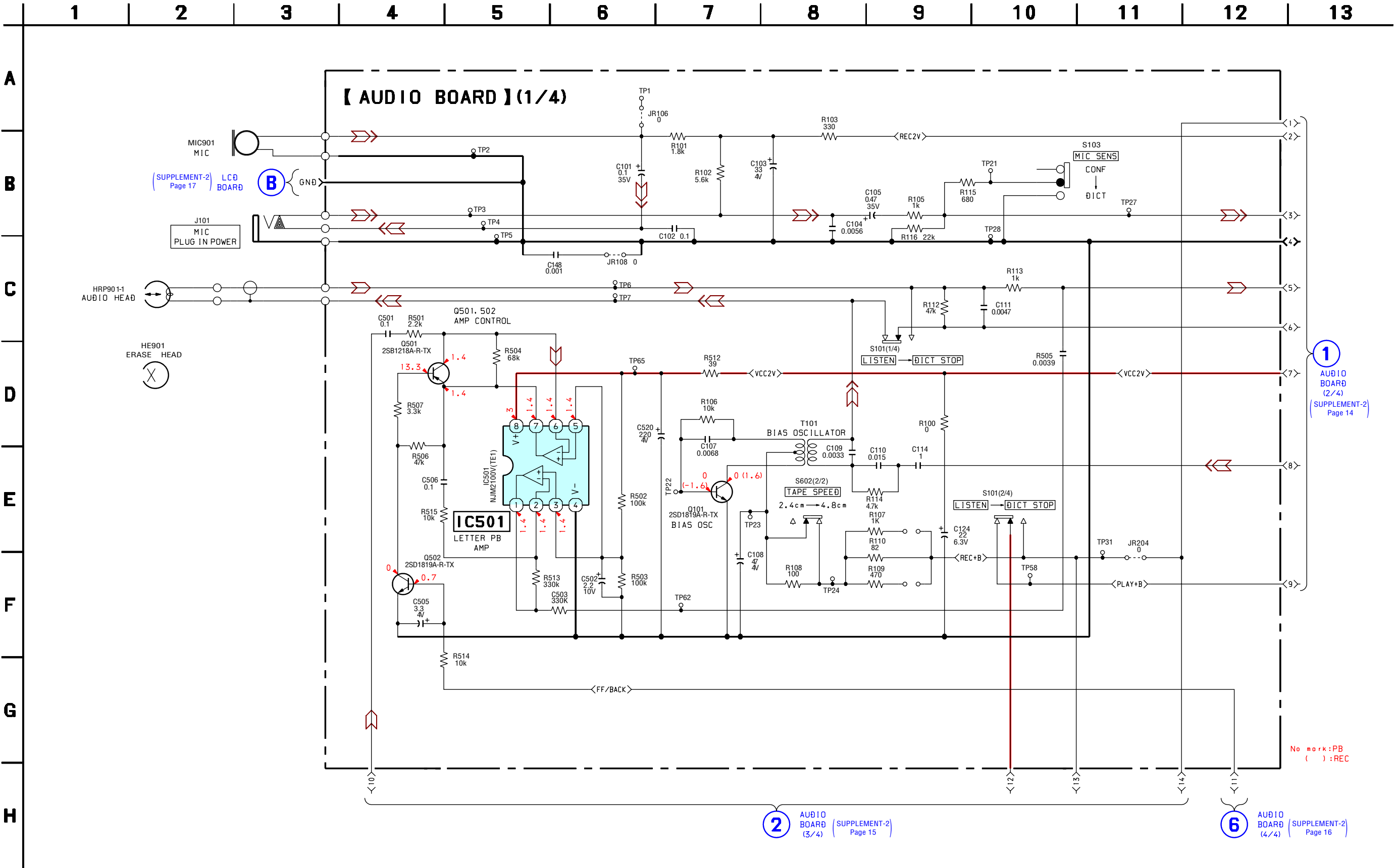
4-1. BLOCK DIAGRAM – AUDIO SECTION –



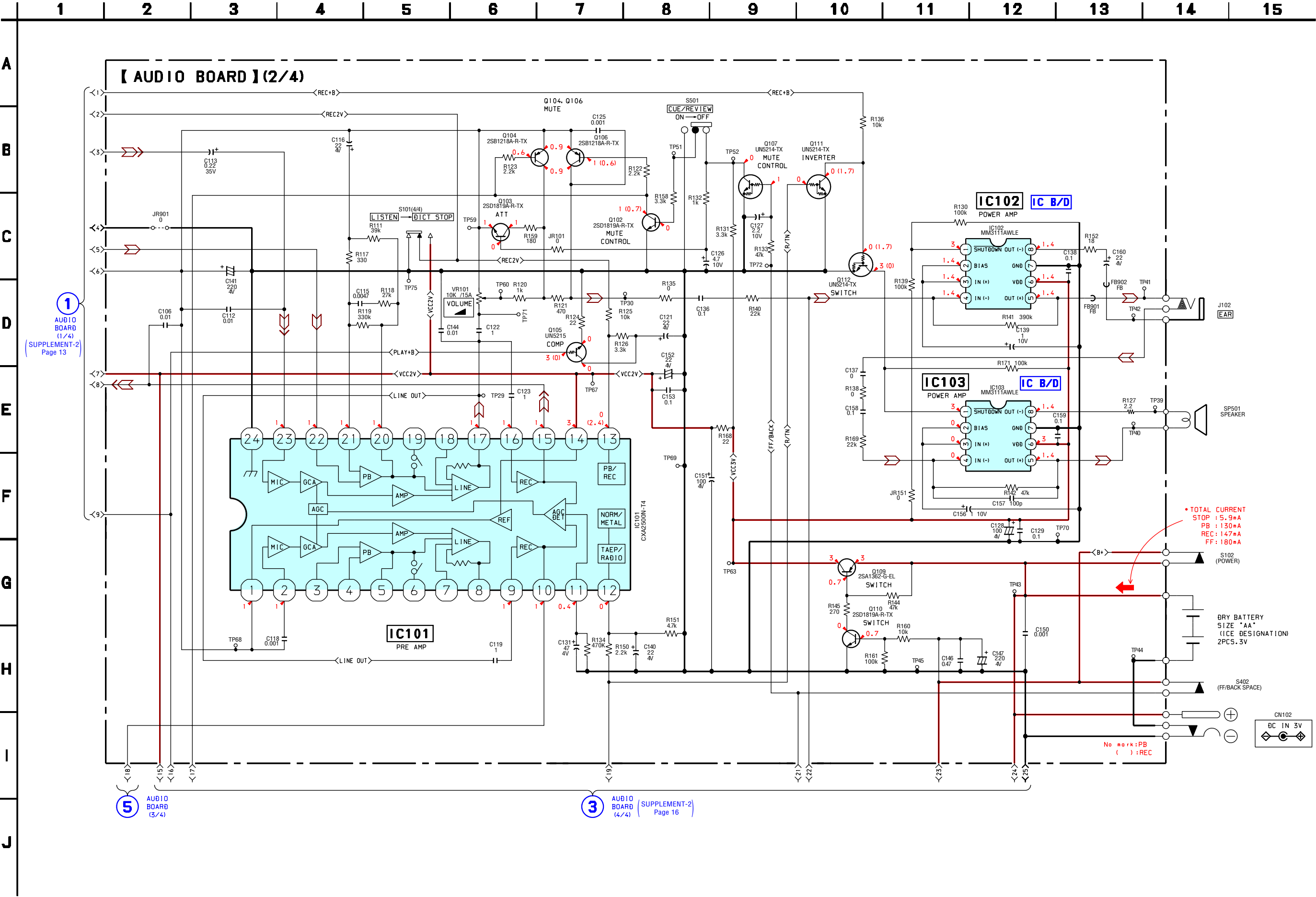
	1	2	3	4	5	6	7	8	9	10	11
A	【AUDIO BOARD】(SIDE A)				【AUDIO BOARD】(SIDE B)			【LCD BOARD】(SIDE A)		【LCD BOARD】(SIDE B)	
B											
C											
D											
E											
F											
G											

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location		
D161	D-3	D601	C-2	IC103	D-7	Q1	D-2	Q104	C-6	Q161	B-4	Q506	B-2	Q514	C-3	Q522	D-3	Q608	D-2	Q704	B-10	Q712	D-9
D501	C-2	D701	D-9	IC501	D-7	Q2	E-2	Q105	D-7	Q162	E-6	Q507	C-8	Q515	B-3	Q523	B-2	Q610	E-2	Q705	B-10	Q713	D-10
D502	D-2	D702	D-10	IC502	C-6	Q3	D-2	Q106	C-6	Q163	D-3	Q508	D-7	Q516	B-6	Q601	C-1	Q611	F-6	Q706	B-10	Q714	D-9
D503	B-6	D703	D-11	IC503	C-8	Q4	D-2	Q107	D-7	Q501	D-8	Q509	D-7	Q517	B-7	Q602	C-2	Q612	C-2	Q707	C-10	Q715	D-9
D504	C-7	D704	D-10	IC504	B-3	Q5	D-2	Q109	E-3	Q502	E-7	Q510	D-7	Q518	B-7	Q603	D-2	Q613	D-2	Q708	C-10		
D505	B-2			IC601	F-7	Q101	C-6	Q110	E-3	Q503	C-3	Q511	C-2	Q519	B-2	Q605	C-2	Q701	C-9	Q709	B-10		
D506	B-3	IC101	D-6	IC701	C-10	Q102	C-7	Q111	D-6	Q504	B-2	Q512	C-2	Q520	D-7	Q606	D-2	Q702	C-10	Q710	C-10		
D507	B-2	IC102	D-6			Q103	C-6	Q112	D-6	Q505	B-2	Q513	D-2	Q521	C-3	Q607	E-2	Q703	C-10	Q711	D-9		

4-3. SCHEMATIC DIAGRAM – AUDIO BOARD (1/4) –



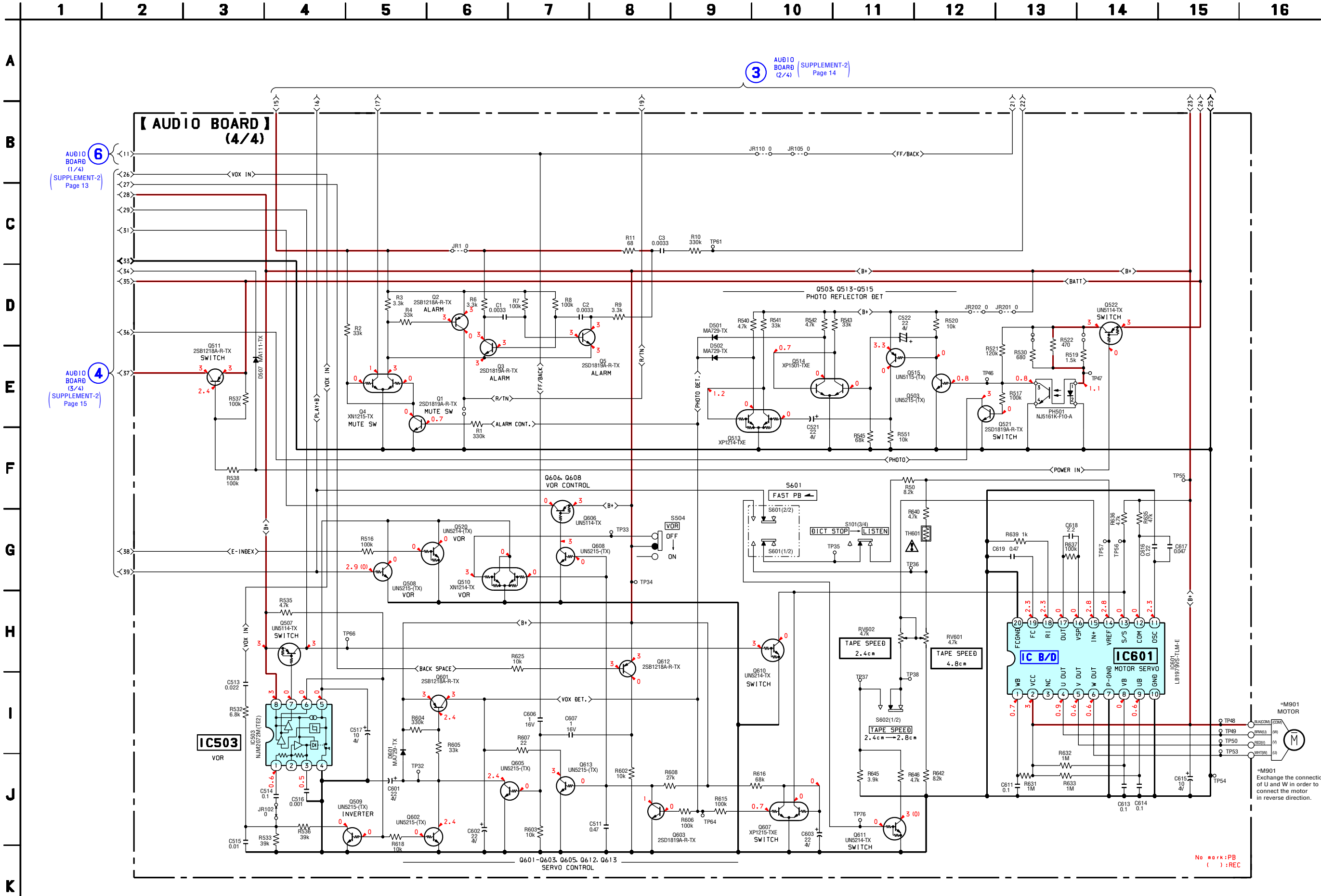
4-4. SCHEMATIC DIAGRAM – AUDIO BOARD (2/4) – • See page 18 for IC Block Diagrams.

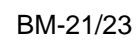


15



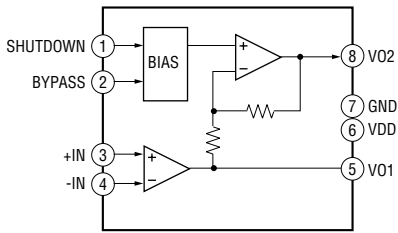
4-6. SCHEMATIC DIAGRAM – AUDIO BOARD (4/4) – • See page 18 for IC Block Diagram.



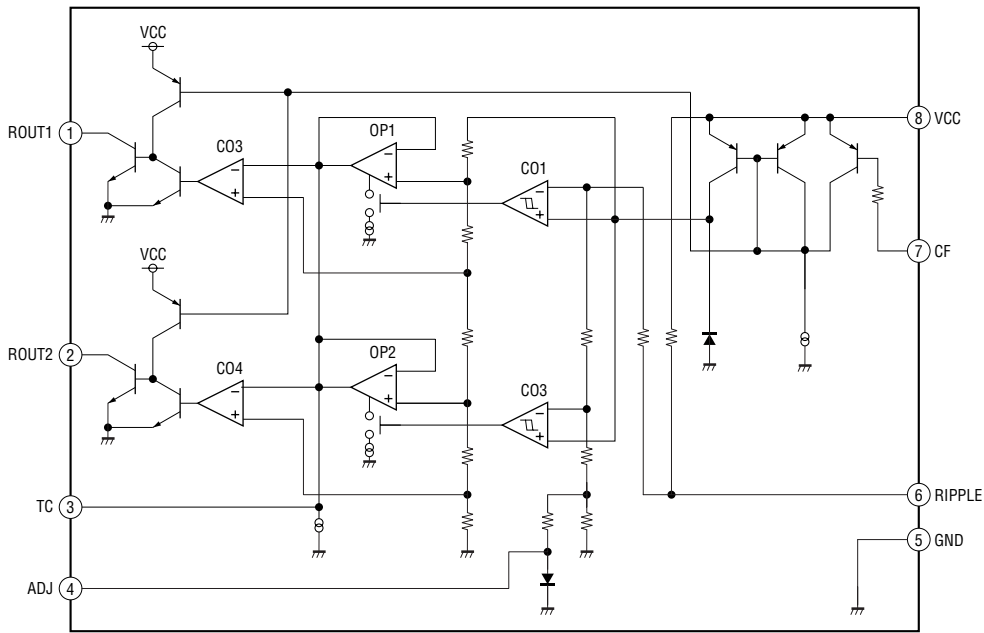


• IC Block Diagrams
— AUDIO Board —

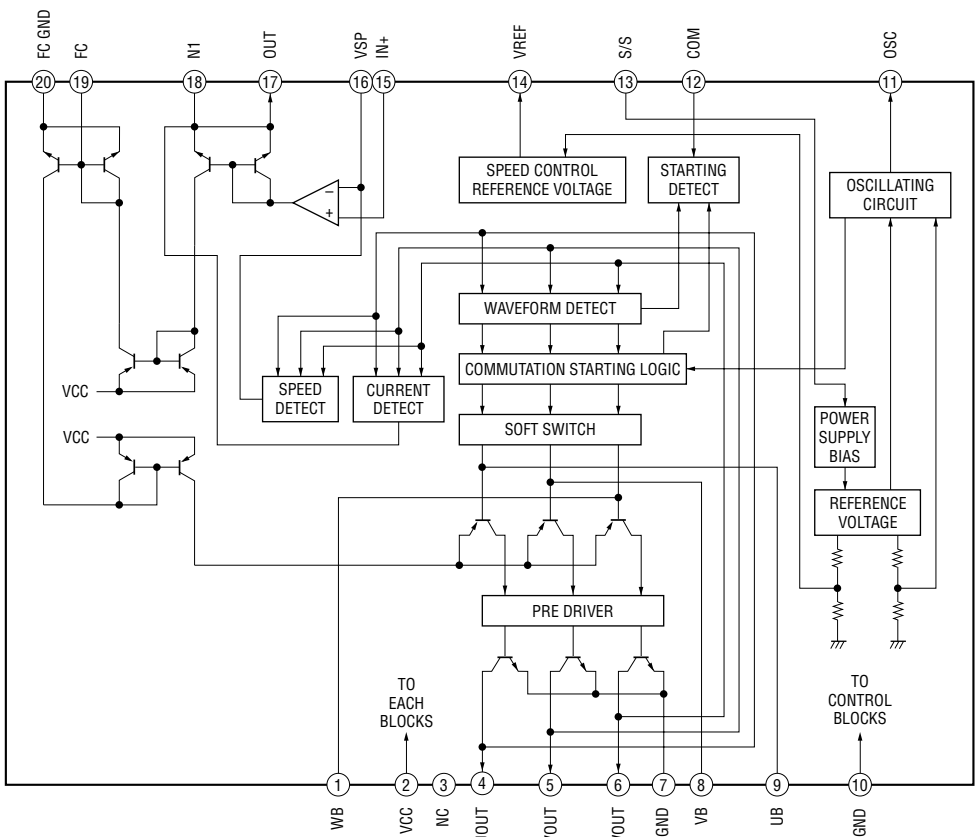
IC102, IC103 MM3111AWLE



IC502 MM1210-XFF







IC601 LB1979VS-TLM-E



• IC Pin Function Description

LCD BOARD IC701 SYSTEM CONTROLLER (BU2456-24)



Pin No.	Pin Name	I/O	Description
1	INT	I	Reset terminal
2	GND	—	GND terminal
3	POWER	I	1. When POWER IN becomes level “L”, UP counter, BATT, or LTR is displayed according to PHOTO IN change. 2. When POWER IN becomes level “H”, the HALT state is set, displaying is stopped, and the detection of all inputs are also stopped.
4	IN CTL	O	Rc/Rd input control terminal
5	COM1	O	COM 1 First digit (first digit from the right)
6	COM2	O	COM 2 Second digit (second digit from the right)
7	BATT1 (RESET)	I	BATT IN 1. When BATT1=H, and BATT2=L, “  ” is displayed. 2. When BATT1=H, and BATT2=L, “  ” is displayed. 3. When BATT1=H, and BATT2=L, “  ” is displayed. 4. When BATT1=H, and BATT2=L, “  ” is displayed. 5. BATT IN will not be accepted during HALT. RESET IN
8	BATT2 (LTR)	I	1. Forces the counter to display “ <i>BBB</i> ” while it is displaying. 2. Set the RAM of the counter to display “ <i>BBB</i> ” while the LTR is displayed. 3. RESET IN will not be accepted during HALT. LTR IN 1. The counter is stopped if it is displaying and “L” is displayed. 2. Even if “L” is displayed, the counter will operate. 3. LTR IN will not be accepted during HALT.
9	PHOTO	I	1. When the tape is rotated while the tape recorder is operating, photo detection is input. 2. PHOTO IN will not be accepted during HALT.
10	BS	I	1. The DOWN counter is set when L and the UP counter is set when H. 2. BS IN will not be accepted during HALT.
11	SEG8	O	Segment output terminal
12	NC	—	
13	NC	—	
14	SEG1	O	Segment output terminal
15	SEG2	O	Segment output terminal
16	SEG3	O	Segment output terminal
17	SEG4	O	Segment output terminal
18	SEG5	O	Segment output terminal
19	SEG6	O	Segment output terminal
20	SEG7	O	Segment output terminal
21	COM3	O	COM 3 Third digit (third digit from the right)
22	OSC	O	X’tal oscillation terminal (1MHz)
23	OSC	I	X’tal oscillation terminal (1MHz)
24	VCC	—	Power supply terminal


SECTION 5
EXPLODED VIEWS

NOTE:

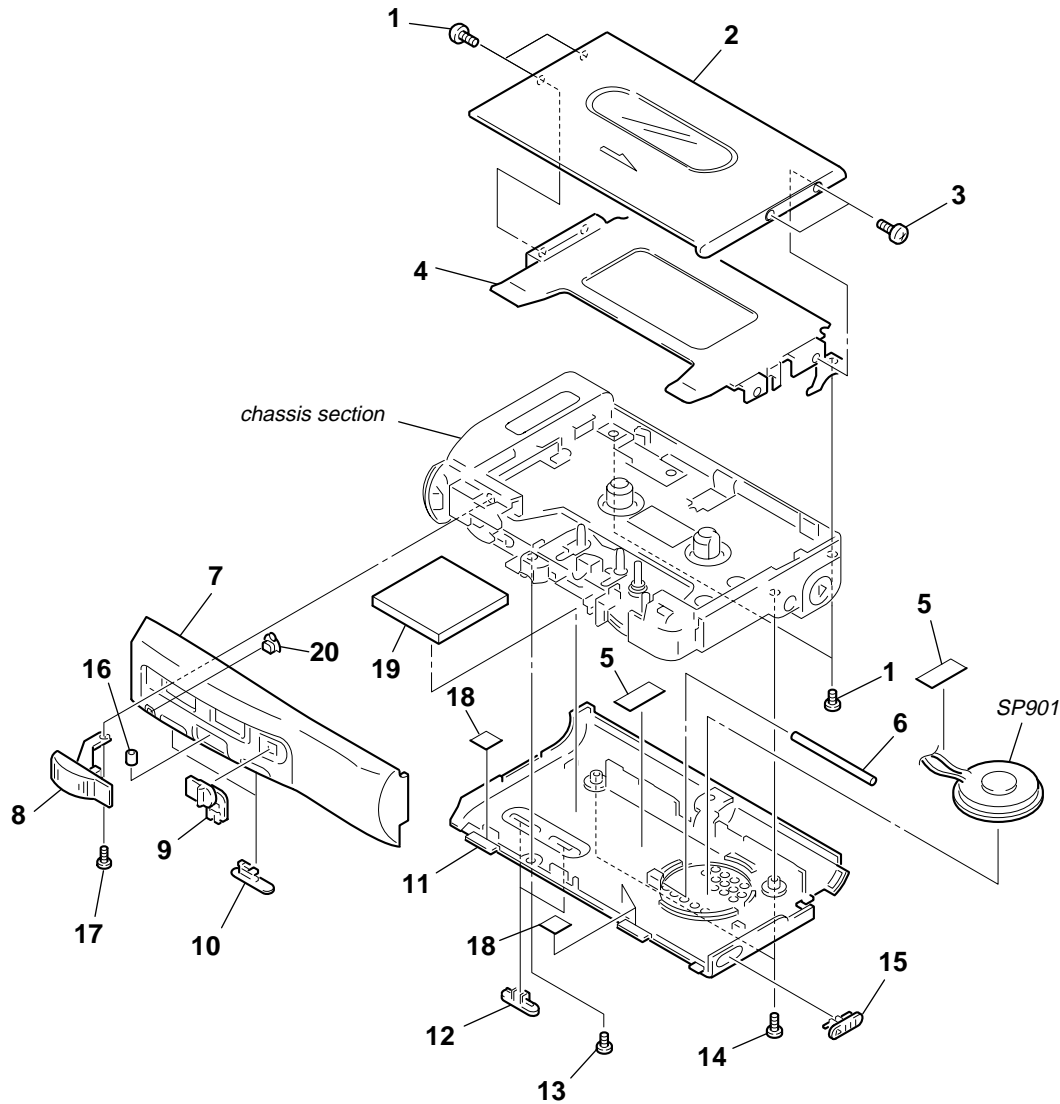
- XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

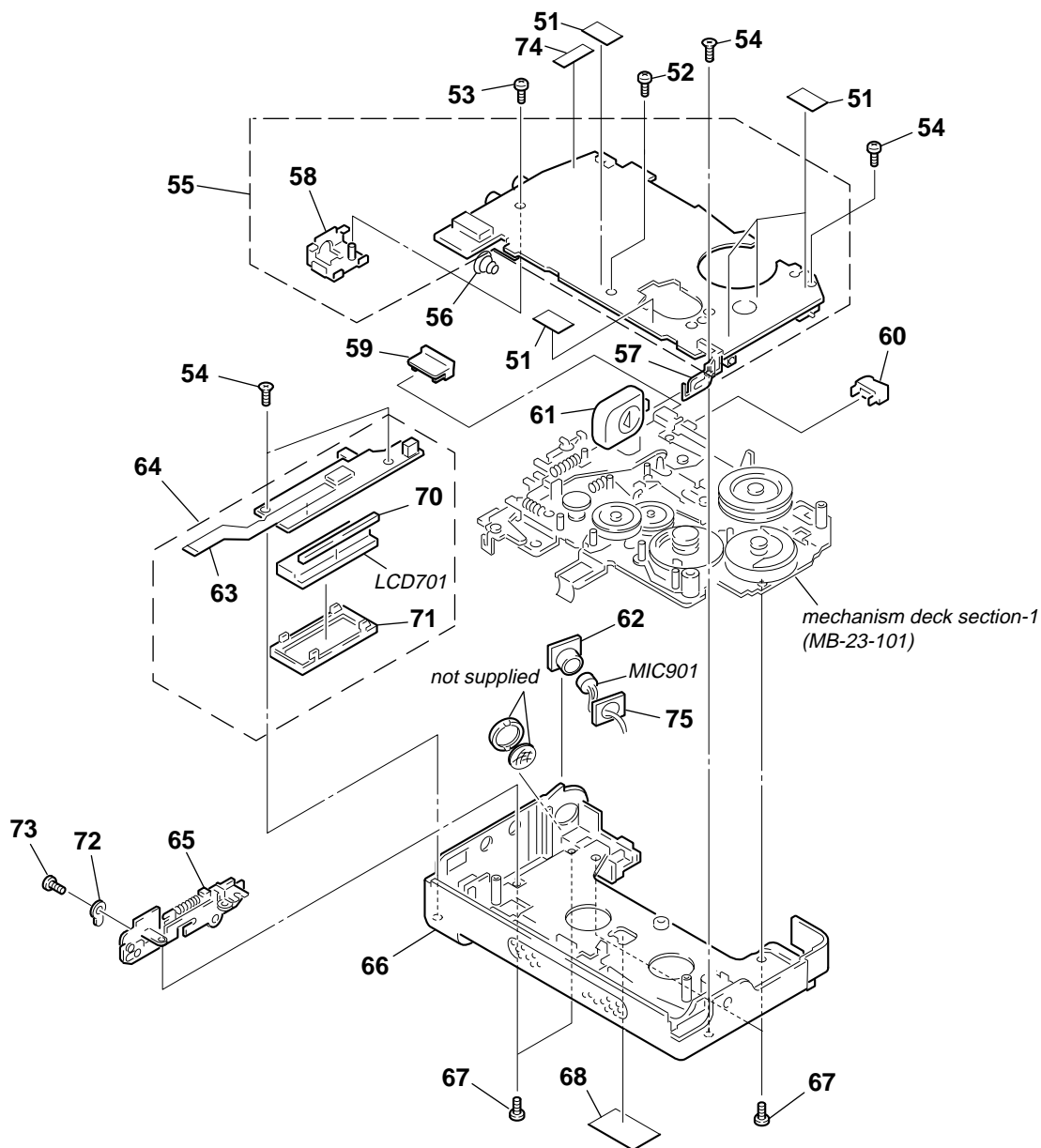
Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. CABINET SECTION



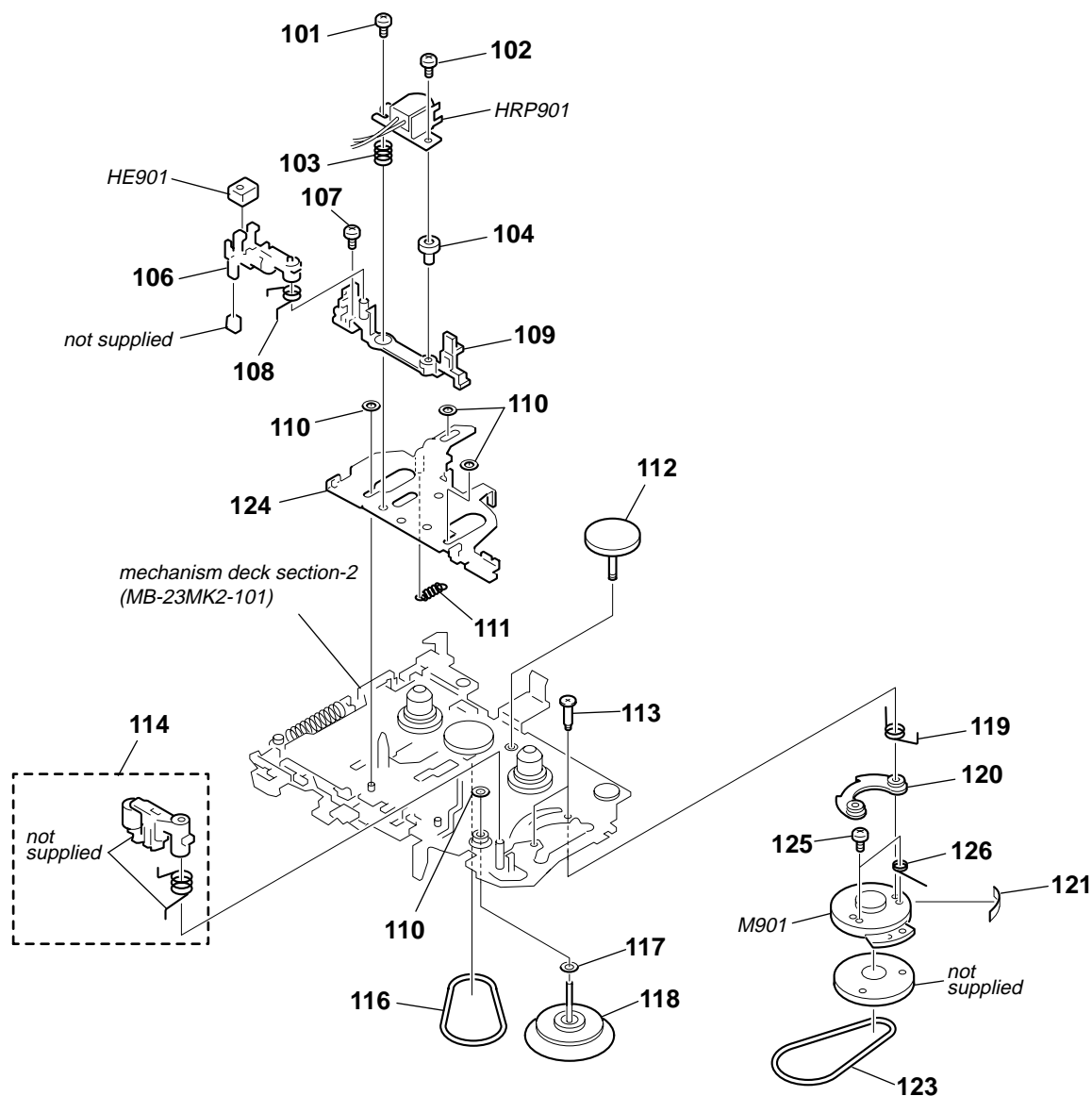
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-704-197-03	SCREW (M1.4X1.6), LOCKING		12	3-909-957-01	KNOB (VOR)	
2	X-3367-817-1	PANEL ASSY, CASSETTE		13	3-366-890-51	SCREW (M1.4X6.0)	
3	3-704-197-42	SCREW (M1.4X2.2), LOCKING		14	3-318-203-98	SCREW (B1.7X11), TAPPING	
4	X-3367-810-1	PANEL ASSY, HOLDER		15	3-365-623-01	KNOB (DOLBY)	
5	3-831-441-11	CUSHION, CABINET UPPER 10X7X0.5		16	3-347-746-11	COLLAR	
* 6	3-374-741-01	BRACKET (SPEAKER), CONCLUDE		17	3-365-630-02	SCREW (M1.4)	
7	3-909-973-01	PANEL, CONTROL		18	4-017-441-01	CUSHION (B)	
8	X-3367-812-1	BUTTON ASSY, CONTROL		19	3-915-246-01	CUSHION	
9	3-909-955-01	KNOB (HOLD)		20	3-909-956-01	BUTTON (E-IND)	
10	3-909-954-01	KNOB (A)					
11	X-3367-816-1	CABINET (REAR) ASSY		SP901	1-504-691-13	SPEAKER (3.6cm)	

5-2. CHASSIS SECTION



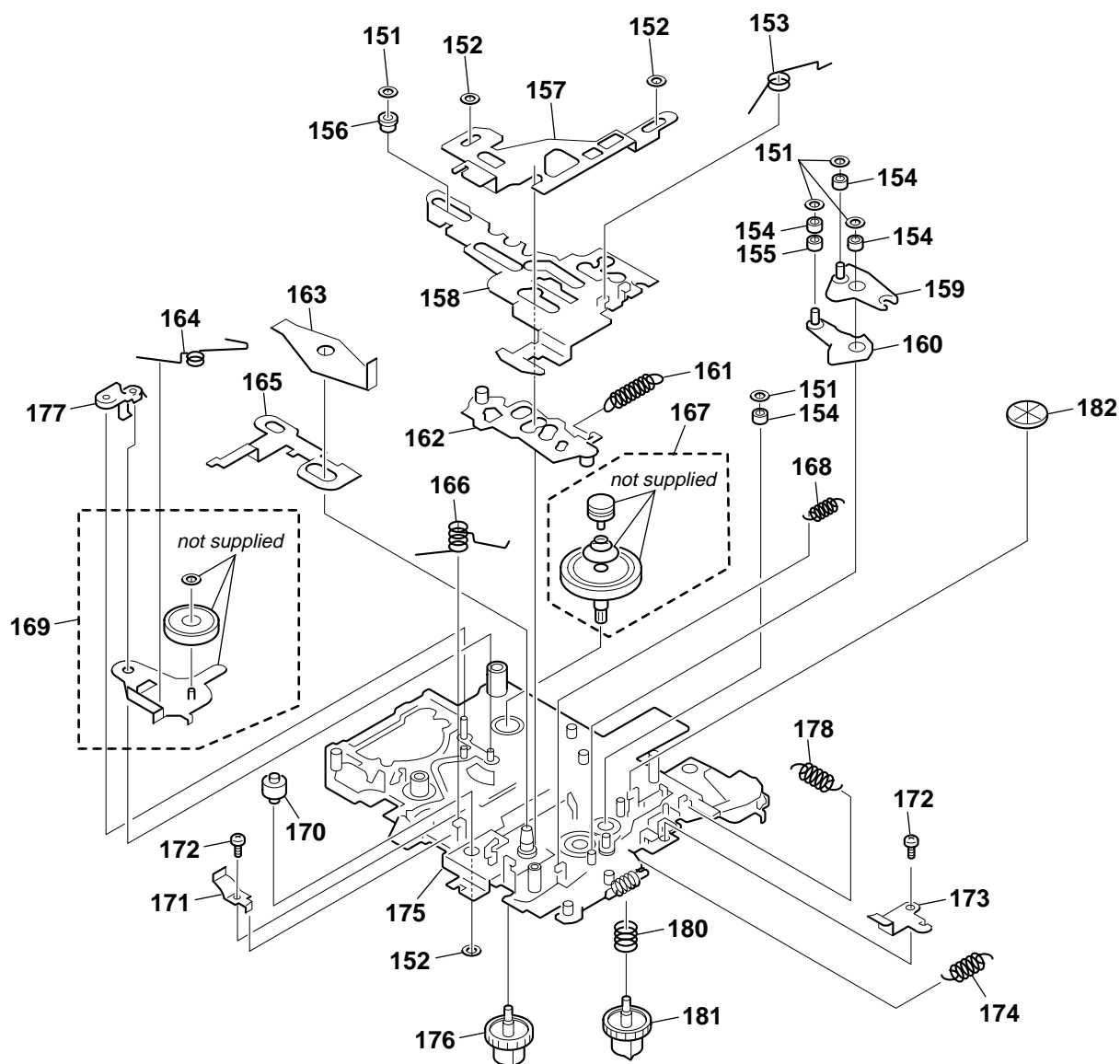
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-831-441-11	CUSHION, CABINET UPPER 10X7X0.5		65	X-3367-814-1	PLATE, LOCK ASSY	
52	3-345-648-81	SCREW (M1.4X3)		66	X-3367-813-1	CABINET (FRONT) ASSY	
53	3-703-502-01	SCREW		67	3-704-197-33	SCREW (M1.4X3.0), LOCKING	
54	3-375-114-61	SCREW		68	3-371-862-01	PLATE, ORNAMENTAL	
55	A-1138-332-A	AUDIO BOARD, COMPLETE		* 70	1-537-724-11	CONDUCTIVE BOARD, CONNECTION	
56	3-909-950-01	SPRING, BATTERY COIL		71	3-911-887-01	HOLDER, LCD	
57	X-3367-811-1	TERMINAL BOARD ASSY		72	7-623-505-01	LUG, 2	
* 58	X-3363-574-1	HOLDER ASSY, JACK		73	3-891-132-00	SCREW (M1.7X2.0), SPECIAL HEAD	
59	3-909-952-01	BUTTON (EJECT)		74	4-017-441-01	CUSHION (B)	
60	3-909-951-01	BUTTON (FF)		* 75	3-914-611-01	HOLDER, MICROPHONE	
61	3-909-953-01	LID, BATTERY CASE		LCD701	1-810-464-11	DISPLAY PANEL, LIQUID CRYSTAL	
62	3-320-975-01	CUSHION (A), MICROPHONE					
63	1-652-024-11	PC BOARD, FLEXIBLE					
64	A-1139-877-A	LCD BOARD, COMPLETE		MIC901	1-542-080-11	MICROPHONE, BUILT-IN	

5-3. MECHANISM DECK SECTION-1 (MB-23-101)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	3-375-135-02	SCREW (1.4), SPECIAL		117	3-701-437-51	WASHER	
102	3-376-177-02	SCREW (M1.4X3.8)		118	X-3369-923-1	WHEEL ASSY (ZNDC), CAPSTAN	
103	3-371-882-01	SPRING (AZIMUTH), COMPRESSION		119	3-371-822-01	SPRING (PINCH LEVER), TORSION	
104	3-375-045-01	COLLAR (HEAD)		* 120	3-371-885-01	CUSHION, MOTOR	
106	3-371-851-06	BRACKET (E HEAD)		121	3-831-441-11	CUSHION, CABINET UPPER 10X7X0.5	
107	3-704-197-11	SCREW (M1.4X2.0), LOCKING		123	3-371-869-01	BELT (CAPSTAN)	
108	3-023-711-01	SPRING (E HEAD), TORSION		124	X-3367-821-2	CHASSIS (HEAD) ASSY	
109	3-371-839-11	BRACKET (HEAD)		125	3-234-449-05	SCREW (M1.4)	
110	3-321-483-11	RING, RETAINING		126	3-374-119-02	SPRING (GROUND), TORSION	
111	3-910-002-01	SPRING, TENSION		HRP901	1-500-126-12	HEAD, MAGNETIC (RECORD/PLAYBACK)	
112	3-371-854-01	GEAR (FF)		M901	1-698-452-14	MOTOR, DC	
113	3-371-886-02	SCREW (MOTOR), STEP		HE901	1-543-876-11	HEAD (ERASE)	
114	X-3363-573-1	PINCH ROLLER ASSY					
116	3-924-682-01	BELT (FR)					

5-4. MECHANISM DECK SECTION-2 (MB-23-101)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	3-315-384-11	WASHER, STOPPER		167	X-3367-818-1	TABLE ASSY, FELT	
152	3-321-483-11	RING, RETAINING		168	3-910-004-01	SPRING, TENSION	
153	3-910-006-01	SPRING, TORSION		169	X-3363-568-1	LEVER ASSY, IDLER	
154	3-909-999-01	ROLLER (C)		170	3-909-996-01	SHAFT (CHASSIS-D)	
155	3-909-997-01	ROLLER (A)					
156	3-909-998-01	ROLLER (B)		* 171	3-915-376-01	SPRING (LOCK), LEAF	
* 157	3-909-985-01	LEVER (EJECT)		172	3-704-197-03	SCREW (M1.4X1.6), LOCKING	
* 158	3-909-987-01	LEVER (SLIDE)		* 173	3-909-986-02	HOLDER (SPRING)	
159	X-3367-822-2	LEVER (REC 2) ASSY		174	3-910-003-01	SPRING, TENSION	
160	X-3367-823-2	LEVER (CL) ASSY		175	X-3367-819-8	CHASSIS ASSY	
161	3-910-005-01	SPRING, TENSION		176	3-371-865-01	GEAR (T REEL)	
162	X-3367-820-3	LEVER (EJECT) ASSY		177	3-914-860-01	STOPPER (IDLER)	
* 163	3-909-995-02	LEVER (SW)		178	3-911-371-01	SPRING, TENSION	
164	3-910-007-01	SPRING (IDLER), TORSION		180	3-371-881-01	SPRING (B.T), COMPRESSION	
* 165	3-909-988-02	LEVER (LOCK)		181	3-371-866-01	GEAR (S REEL)	
166	3-371-872-01	SPRING (FR), TORSION		182	3-910-000-01	REFLECTOR (REEL)	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS
uF: μ F

- COILS
uH: μ H
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable
- SEMICONDUCTORS
In each case, u: μ , for example:
uA. . : μ A. ., uPA. . : μ PA. .,
uPB. . : μ PB. ., uPC. . : μ PC. .,
uPD. . : μ PD. .
- Accessories are given in the last of this parts list.

When indicating parts by reference number, please include the board name.

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
	A-1138-332-A	AUDIO BOARD, COMPLETE *****					C141	1-126-246-11	ELECT CHIP	220uF	20%	4V	
							C144	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
							C146	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
	3-703-929-01	SPACER (A)					C147	1-126-246-11	ELECT CHIP	220uF	20%	4V	
	3-331-066-11	SHEET (B), INSULATING											
	3-345-648-01	SCREW (M1.4X3)					C148	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
	3-831-441-99	SPACER					C150	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
*	3-914-610-01	SHEET (PC BOARD)					C151	1-126-209-11	ELECT CHIP	100uF	20%	4V	
		< CAPACITOR >					C152	1-104-847-11	TANTAL. CHIP	22uF	20%	4V	
							C153	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C1	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V		C156	1-135-208-11	TANTAL. CHIP	1uF	20%	10V	
C2	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V		C157	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C3	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V		C158	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C101	1-135-070-00	TANTAL. CHIP	0.1uF	20%	35V		C159	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C102	1-164-360-11	CERAMIC CHIP	0.1uF		16V		C160	1-104-847-11	TANTAL. CHIP	22uF	20%	4V	
C103	1-104-752-11	TANTAL. CHIP	33uF	20%	4V		C161	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C104	1-164-172-11	CERAMIC CHIP	0.0056uF	10%	25V		C162	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C105	1-135-145-11	TANTAL. CHIP	0.47uF	20%	35V		C163	1-115-156-11	CERAMIC CHIP	1uF		10V	
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V		C164	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C107	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V		C165	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C108	1-126-208-21	ELECT CHIP	47uF	20%	4V		C501	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C109	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V		C502	1-135-149-21	TANTAL. CHIP	2.2uF	20%	10V	
C110	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V		C503	1-216-851-11	METAL CHIP	330K	5%	1/10W	
C111	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V		C504	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C112	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V		C505	1-104-912-11	TANTAL. CHIP	3.3uF	20%	4V	
C113	1-135-072-21	TANTAL. CHIP	0.22uF	20%	35V		C506	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C114	1-109-982-11	CERAMIC CHIP	1uF	10%	10V		C507	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C115	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V		C508	1-135-201-11	TANTAL. CHIP	10uF	20%	4V	
C116	1-104-847-11	TANTAL. CHIP	22uF	20%	4V		C509	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C118	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V		C510	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C119	1-115-156-11	CERAMIC CHIP	1uF		10V		C511	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C121	1-104-847-11	TANTAL. CHIP	22uF	20%	4V		C512	1-104-752-11	TANTAL. CHIP	33uF	20%	4V	
C122	1-164-346-11	CERAMIC CHIP	1uF		16V		C513	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C123	1-115-156-11	CERAMIC CHIP	1uF		10V		C514	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C124	1-127-574-91	TANTAL. CHIP	22uF	20%	6.3V		C515	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C125	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V		C516	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C126	1-135-210-11	TANTAL. CHIP	4.7uF	20%	10V		C517	1-135-201-11	TANTAL. CHIP	10uF	20%	4V	
C127	1-135-149-21	TANTAL. CHIP	2.2uF	20%	10V		C519	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C128	1-126-209-11	ELECT CHIP	100uF	20%	4V		C520	1-126-246-11	ELECT CHIP	220uF	20%	4V	
C129	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		C521	1-104-847-11	TANTAL. CHIP	22uF	20%	4V	
C131	1-131-862-91	TANTAL. CHIP	47uF	20%	4V		C522	1-104-847-11	TANTAL. CHIP	22uF	20%	4V	
C136	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		C523	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C137	1-216-864-11	SHORT CHIP	0				C525	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V	
C138	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V		C526	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V	
C139	1-135-208-11	TANTAL. CHIP	1uF	20%	10V		C528	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C140	1-104-847-11	TANTAL. CHIP	22uF	20%	4V		C601	1-104-847-11	TANTAL. CHIP	22uF	20%	4V	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C602	1-104-847-11	TANTAL. CHIP	22uF 20% 4V	JR203	1-216-864-11	SHORT CHIP	0
C603	1-104-847-11	TANTAL. CHIP	22uF 20% 4V	JR204	1-216-296-11	SHORT CHIP	0
C606	1-164-346-11	CERAMIC CHIP	1uF 16V	JR205	1-216-864-11	SHORT CHIP	0
C607	1-164-346-11	CERAMIC CHIP	1uF 16V	JR901	1-216-864-11	SHORT CHIP	0
C611	1-107-826-11	CERAMIC CHIP	0.1uF 10% 16V			< COIL >	
C613	1-107-826-11	CERAMIC CHIP	0.1uF 10% 16V	L501	1-412-064-11	INDUCTOR	100uH
C614	1-107-826-11	CERAMIC CHIP	0.1uF 10% 16V			< PHOTO INTERRUPTER >	
C615	1-135-201-11	TANTAL. CHIP	10uF 20% 4V	PH501	8-719-017-54	DIODE NJ5161K-F10-A	
C616	1-127-715-91	CERAMIC CHIP	0.22uF 10% 16V			< TRANSISTOR >	
C617	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V	Q1	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
C618	1-125-889-91	CERAMIC CHIP	2.2uF 10% 10V	Q2	8-729-402-55	TRANSISTOR	2SB1218A-R-TX
C619	1-125-891-11	CERAMIC CHIP	0.47uF 10% 10V	Q3	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
		< CONNECTOR >		Q4	8-729-403-17	TRANSISTOR	XN1215-TX
CN101	1-750-338-51	CONNECTOR, FFC/FPC (ZIF) 12P		Q5	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
CN102	1-580-372-43	JACK, DC (POLARITY UNIFIED TYPE)		Q101	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
		< DIODE >		Q102	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
D161	8-719-404-50	DIODE MA111-TX		Q103	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
D501	8-719-420-51	DIODE MA729-TX		Q104	8-729-402-55	TRANSISTOR	2SB1218A-R-TX
D502	8-719-420-51	DIODE MA729-TX		Q105	8-729-420-50	TRANSISTOR	UN5215-(TX)
D503	8-719-404-50	DIODE MA111-TX		Q106	8-729-402-55	TRANSISTOR	2SB1218A-R-TX
D504	8-719-404-50	DIODE MA111-TX		Q107	8-729-402-93	TRANSISTOR	UN5214-TX
D505	8-719-404-50	DIODE MA111-TX		Q109	8-729-230-69	TRANSISTOR	2SA1362-G-EL
D506	8-719-420-51	DIODE MA729-TX		Q110	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
D507	8-719-404-50	DIODE MA111-TX		Q111	8-729-402-93	TRANSISTOR	UN5214-TX
D601	8-719-420-51	DIODE MA729-TX		Q112	8-729-402-93	TRANSISTOR	UN5214-TX
		< FERRITE BEAD >		Q161	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
FB901	1-500-329-21	INDUCTOR, FERRITE BEAD		Q162	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
FB902	1-500-329-21	INDUCTOR, FERRITE BEAD		Q163	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
		< IC >		Q501	8-729-402-55	TRANSISTOR	2SB1218A-R-TX
IC101	8-752-089-40	IC CXA2500N-T4		Q502	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
IC102	6-707-089-01	IC MM3111AWLE		Q503	8-729-420-50	TRANSISTOR	UN5215-(TX)
IC103	6-707-089-01	IC MM3111AWLE		Q504	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
IC501	8-759-097-92	IC NJM2100V (TE1)		Q505	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
IC502	8-759-180-33	IC MM1210-XFF		Q506	8-729-402-93	TRANSISTOR	UN5214-TX
IC503	8-759-701-51	IC NJM2072M (TE2)		Q507	8-729-402-96	TRANSISTOR	UN5114-TX
IC504	8-759-493-26	IC XC6371A300PR		Q508	8-729-420-50	TRANSISTOR	UN5215-(TX)
IC601	8-759-638-51	IC LB1979VS-TLM-E		Q509	8-729-420-50	TRANSISTOR	UN5215-(TX)
		< JACK >		Q510	8-729-420-16	TRANSISTOR	XN1214-TX
J101	1-766-156-21	JACK (MIC PLUG IN POWER)		Q511	8-729-402-55	TRANSISTOR	2SB1218A-R-TX
J102	1-766-156-21	JACK (EAR)		Q512	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
		< JUMPER RESISTOR >		Q513	8-729-426-31	TRANSISTOR	XP1214-TXE
JR1	1-216-864-11	SHORT CHIP	0	Q514	8-729-429-44	TRANSISTOR	XP1501-TXE
JR101	1-216-864-11	SHORT CHIP	0	Q515	8-729-420-53	TRANSISTOR	UN5115-(TX)
JR102	1-216-864-11	SHORT CHIP	0	Q516	8-729-429-44	TRANSISTOR	XP1501-TXE
JR105	1-216-864-11	SHORT CHIP	0	Q517	8-729-402-96	TRANSISTOR	UN5114-TX
JR106	1-216-864-11	SHORT CHIP	0	Q518	8-729-403-17	TRANSISTOR	XN1215-TX
JR108	1-216-864-11	SHORT CHIP	0	Q519	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
JR110	1-216-864-11	SHORT CHIP	0	Q520	8-729-402-93	TRANSISTOR	UN5214-TX
JR151	1-216-864-11	SHORT CHIP	0	Q521	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
JR201	1-216-296-11	SHORT CHIP	0	Q522	8-729-402-96	TRANSISTOR	UN5114-TX
JR202	1-216-864-11	SHORT CHIP	0	Q523	8-729-402-32	TRANSISTOR	2SD1819A-R-TX
				Q601	8-729-402-55	TRANSISTOR	2SB1218A-R-TX
				Q602	8-729-420-50	TRANSISTOR	UN5215-(TX)
				Q603	8-729-402-32	TRANSISTOR	2SD1819A-R-TX

AUDIO

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
Q605	8-729-420-50	TRANSISTOR	UN5215-(TX)				R141	1-216-852-11	METAL CHIP	390K	5%	1/10W	
Q606	8-729-402-96	TRANSISTOR	UN5114-TX				R142	1-216-841-11	METAL CHIP	47K	5%	1/10W	
Q607	8-729-426-36	TRANSISTOR	XP1215-TXE										
Q608	8-729-420-50	TRANSISTOR	UN5215-(TX)				R144	1-216-841-11	METAL CHIP	47K	5%	1/10W	
Q610	8-729-402-93	TRANSISTOR	UN5214-TX				R145	1-216-814-11	METAL CHIP	270	5%	1/10W	
							R150	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
Q611	8-729-402-93	TRANSISTOR	UN5214-TX				R151	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	
Q612	8-729-402-55	TRANSISTOR	2SB1218A-R-TX				R152	1-216-800-11	METAL CHIP	18	5%	1/10W	
Q613	8-729-420-50	TRANSISTOR	UN5215-(TX)										
		< RESISTOR >											
R1	1-216-851-11	METAL CHIP	330K	5%	1/10W		R153	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R2	1-216-839-11	METAL CHIP	33K	5%	1/10W		R154	1-216-805-11	METAL CHIP	47	5%	1/10W	
R3	1-216-827-11	METAL CHIP	3.3K	5%	1/10W		R155	1-216-819-11	METAL CHIP	680	5%	1/10W	
R4	1-216-839-11	METAL CHIP	33K	5%	1/10W		R156	1-216-809-11	METAL CHIP	100	5%	1/10W	
R6	1-216-827-11	METAL CHIP	3.3K	5%	1/10W		R157	1-216-837-11	METAL CHIP	22K	5%	1/10W	
R7	1-216-845-11	METAL CHIP	100K	5%	1/10W		R158	1-216-827-11	METAL CHIP	3.3K	5%	1/10W	
R8	1-216-845-11	METAL CHIP	100K	5%	1/10W		R159	1-216-812-11	METAL CHIP	180	5%	1/10W	
R9	1-216-827-11	METAL CHIP	3.3K	5%	1/10W		R160	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R10	1-216-851-11	METAL CHIP	330K	5%	1/10W		R161	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R11	1-216-807-11	METAL CHIP	68	5%	1/10W		R162	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R50	1-216-832-11	METAL CHIP	8.2K	5%	1/10W		R163	1-216-850-11	METAL CHIP	270K	5%	1/10W	
R100	1-216-864-11	SHORT CHIP	0				R164	1-216-826-11	METAL CHIP	2.7K	5%	1/10W	
R101	1-216-824-11	METAL CHIP	1.8K	5%	1/10W		R165	1-216-814-11	METAL CHIP	270	5%	1/10W	
R102	1-216-830-11	METAL CHIP	5.6K	5%	1/10W		R166	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R103	1-216-815-11	METAL CHIP	330	5%	1/10W		R167	1-216-813-11	METAL CHIP	220	5%	1/10W	
R105	1-216-821-11	METAL CHIP	1K	5%	1/10W		R168	1-216-801-11	METAL CHIP	22	5%	1/10W	
R106	1-216-833-11	METAL CHIP	10K	5%	1/10W		R169	1-216-837-11	METAL CHIP	22K	5%	1/10W	
R107	1-216-821-11	METAL CHIP	1K	5%	1/10W		R170	1-216-857-11	METAL CHIP	1M	5%	1/10W	
R108	1-216-809-11	METAL CHIP	100	5%	1/10W		R171	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R109	1-216-817-11	METAL CHIP	470	5%	1/10W		R501	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	
R110	1-216-808-11	METAL CHIP	82	5%	1/10W		R502	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R111	1-216-840-11	METAL CHIP	39K	5%	1/10W		R503	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R112	1-216-841-11	METAL CHIP	47K	5%	1/10W		R504	1-216-843-11	METAL CHIP	68K	5%	1/10W	
R113	1-216-821-11	METAL CHIP	1K	5%	1/10W		R505	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V	
R114	1-216-829-11	METAL CHIP	4.7K	5%	1/10W		R506	1-216-841-11	METAL CHIP	47K	5%	1/10W	
R115	1-216-819-11	METAL CHIP	680	5%	1/10W		R507	1-216-827-11	METAL CHIP	3.3K	5%	1/10W	
R116	1-216-837-11	METAL CHIP	22K	5%	1/10W		R508	1-218-713-11	METAL CHIP	7.5K	0.5%	1/10W	
R117	1-216-815-11	METAL CHIP	330	5%	1/10W		R509	1-218-716-11	METAL CHIP	10K	0.5%	1/10W	
R118	1-216-838-11	METAL CHIP	27K	5%	1/10W		R510	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R119	1-216-851-11	METAL CHIP	330K	5%	1/10W		R511	1-218-296-11	METAL CHIP	75K	5%	1/10W	
R120	1-216-821-11	METAL CHIP	1K	5%	1/10W		R512	1-216-804-11	METAL CHIP	39	5%	1/10W	
R121	1-216-817-11	METAL CHIP	470	5%	1/10W		R513	1-216-851-11	METAL CHIP	330K	5%	1/10W	
R122	1-216-825-11	METAL CHIP	2.2K	5%	1/10W		R514	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R123	1-216-825-11	METAL CHIP	2.2K	5%	1/10W		R515	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R124	1-216-801-11	METAL CHIP	22	5%	1/10W		R516	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R125	1-216-833-11	METAL CHIP	10K	5%	1/10W		R517	1-216-845-11	METAL CHIP	100K	5%	1/10W	
R126	1-216-827-11	METAL CHIP	3.3K	5%	1/10W		R519	1-216-823-11	METAL CHIP	1.5K	5%	1/10W	
R127	1-216-134-00	RES-CHIP	2.2	5%	1/8W		R520	1-216-833-11	METAL CHIP	10K	5%	1/10W	
R130	1-216-845-11	METAL CHIP	100K	5%	1/10W		R521	1-216-846-11	METAL CHIP	120K	5%	1/10W	
R131	1-216-827-11	METAL CHIP	3.3K	5%	1/10W		R522	1-216-817-11	METAL CHIP	470	5%	1/10W	
R132	1-216-821-11	METAL CHIP	1K	5%	1/10W		R523	1-216-809-11	METAL CHIP	100	5%	1/10W	
R133	1-216-841-11	METAL CHIP	47K	5%	1/10W		R524	1-216-835-11	METAL CHIP	15K	5%	1/10W	
R134	1-216-853-11	METAL CHIP	470K	5%	1/10W		R526	1-216-851-11	METAL CHIP	330K	5%	1/10W	
R135	1-216-864-11	SHORT CHIP	0				R527	1-216-851-11	METAL CHIP	330K	5%	1/10W	
R136	1-216-833-11	METAL CHIP	10K	5%	1/10W		R528	1-216-835-11	METAL CHIP	15K	5%	1/10W	
R138	1-216-864-11	SHORT CHIP	0				R529	1-216-843-11	METAL CHIP	68K	5%	1/10W	
R139	1-216-845-11	METAL CHIP	100K	5%	1/10W		R530	1-216-819-11	METAL CHIP	680	5%	1/10W	
R140	1-216-837-11	METAL CHIP	22K	5%	1/10W		R531	1-216-821-11	METAL CHIP	1K	5%	1/10W	
							R532	1-218-867-11	METAL CHIP	6.8K	5%	1/10W	
							R533	1-216-840-11	METAL CHIP	39K	5%	1/10W	

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark				
R535	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	S601	1-570-087-11	SWITCH, SLIDE (FAST PB ◀)					
R536	1-216-840-11	METAL CHIP	39K	5%	1/10W	S602	1-571-277-31	SWITCH, SLIDE (FF)					
R537	1-216-845-11	METAL CHIP	100K	5%	1/10W			< TRANSFORMER >					
R538	1-216-845-11	METAL CHIP	100K	5%	1/10W	T101	1-433-251-00	TRANSFORMER, BIAS OSCILLATOR					
R539	1-216-845-11	METAL CHIP	100K	5%	1/10W			< THERMISTOR >					
R540	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	△ TH601	1-803-124-11	THERMISTOR, POSITIVE					
R541	1-216-839-11	METAL CHIP	33K	5%	1/10W			< VARIABLE RESISTOR >					
R542	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	VR101	1-225-294-11	RES, VAR, CARBON	10K	(VOLUME ▶)			
R543	1-216-839-11	METAL CHIP	33K	5%	1/10W	*****							
R544	1-216-833-11	METAL CHIP	10K	5%	1/10W	A-1139-877-A	LCD BOARD, COMPLETE						
R545	1-216-843-11	METAL CHIP	68K	5%	1/10W	*****							
R546	1-216-821-11	METAL CHIP	1K	5%	1/10W	*	1-537-724-11	CONDUCTIVE BOARD, CONNECTION					
R547	1-216-833-11	METAL CHIP	10K	5%	1/10W	*	1-652-024-11	PC BOARD, FLEXIBLE					
R548	1-218-728-11	METAL CHIP	33K	0.5%	1/10W		3-592-351-01	PAPER, VIBRATION PROOF (B)					
R549	1-218-717-11	METAL CHIP	11K	0.5%	1/10W		3-831-441-99	SPACER					
							3-911-887-01	HOLDER, LCD					
								< CAPACITOR >					
R550	1-216-845-11	METAL CHIP	100K	5%	1/10W	C701	1-164-360-11	CERAMIC CHIP	0.1uF	16V			
R551	1-216-833-11	METAL CHIP	10K	5%	1/10W	C702	1-164-360-11	CERAMIC CHIP	0.1uF	16V			
R552	1-216-822-11	METAL CHIP	1.2K	5%	1/10W	C703	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V		
R553	1-216-819-11	METAL CHIP	680	5%	1/10W	C704	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V		
R561	1-216-839-11	METAL CHIP	33K	5%	1/10W	C705	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V		
R562	1-216-839-11	METAL CHIP	33K	5%	1/10W			< DIODE >					
R602	1-216-833-11	METAL CHIP	10K	5%	1/10W	D701	8-719-991-75	DIODE	RB425D-T146				
R603	1-216-833-11	METAL CHIP	10K	5%	1/10W	D702	8-719-991-75	DIODE	RB425D-T146				
R604	1-216-851-11	METAL CHIP	330K	5%	1/10W	D703	8-719-047-19	DIODE	GL8PR29 (DICT/BATT)				
R605	1-216-839-11	METAL CHIP	33K	5%	1/10W	D704	8-719-422-37	DIODE	MA8051-TX				
R606	1-216-845-11	METAL CHIP	100K	5%	1/10W			< IC >					
R607	1-216-801-11	METAL CHIP	22	5%	1/10W	IC701	8-759-281-85	IC	BU2456-24				
R608	1-216-838-11	METAL CHIP	27K	5%	1/10W			< LIQUID CRYSTAL DISPLAY >					
R615	1-216-845-11	METAL CHIP	100K	5%	1/10W	LCD701	1-810-464-11	DISPLAY PANEL, LIQUID CRYSTAL					
R616	1-216-843-11	METAL CHIP	68K	5%	1/10W			< TRANSISTOR >					
R618	1-216-833-11	METAL CHIP	10K	5%	1/10W	Q701	8-729-402-32	TRANSISTOR	2SD1819A-R-TX				
R625	1-216-833-11	METAL CHIP	10K	5%	1/10W	Q702	8-729-402-55	TRANSISTOR	2SB1218A-R-TX				
R631	1-216-857-11	METAL CHIP	1M	5%	1/10W	Q703	8-729-402-32	TRANSISTOR	2SD1819A-R-TX				
R632	1-216-857-11	METAL CHIP	1M	5%	1/10W	Q704	8-729-402-32	TRANSISTOR	2SD1819A-R-TX				
R633	1-216-857-11	METAL CHIP	1M	5%	1/10W	Q705	8-729-402-55	TRANSISTOR	2SB1218A-R-TX				
R635	1-216-841-11	METAL CHIP	47K	5%	1/10W	Q706	8-729-402-32	TRANSISTOR	2SD1819A-R-TX				
R636	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	Q707	8-729-402-32	TRANSISTOR	2SD1819A-R-TX				
R637	1-216-845-11	METAL CHIP	100K	5%	1/10W	Q708	8-729-402-55	TRANSISTOR	2SB1218A-R-TX				
R639	1-216-821-11	METAL CHIP	1K	5%	1/10W	Q709	8-729-402-32	TRANSISTOR	2SD1819A-R-TX				
R640	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	Q710	8-729-402-55	TRANSISTOR	2SB1218A-R-TX				
R642	1-216-832-11	METAL CHIP	8.2K	5%	1/10W	Q711	8-729-420-44	TRANSISTOR	UN5210-TX				
R645	1-216-828-11	METAL CHIP	3.9K	5%	1/10W	Q712	8-729-420-44	TRANSISTOR	UN5210-TX				
R646	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	Q713	8-729-420-44	TRANSISTOR	UN5210-TX				
< VARIABLE RESISTOR >						Q714	8-729-420-44	TRANSISTOR	UN5210-TX				
RV601	1-238-089-11	RES, ADJ, CERMET	4.7K			Q715	8-729-420-44	TRANSISTOR	UN5210-TX				
RV602	1-238-089-11	RES, ADJ, CERMET	4.7K										
< SWITCH >													
S101	1-572-039-11	SWITCH, SLIDE (LISTEN / DCT / STOP)											
S102	1-771-091-21	SWITCH, PUSH (1 KEY) (POWER)											
S103	1-571-275-31	SWITCH, SLIDE (MIC SENS)											
S401	1-771-091-21	SWITCH, PUSH (1 KEY) (BACK SPACE)											
S402	1-771-091-21	SWITCH, PUSH (1 KEY) (FF/BACK SPACE)											
S501	1-570-397-11	SWITCH, SLIDE (CUE/REVIEW)											
S502	1-572-263-31	SWITCH, SLIDE (LOCK ▶)											
S503	1-570-204-21	SWITCH, KEY BOARD (E-INDEX)											
S504	1-571-275-31	SWITCH, SLIDE (VOR)											

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LCD

Ref. No.	Part No.	Description	Remark		
< RESISTOR >					
R701	1-216-853-11	METAL CHIP	470K	5%	1/10W
R702	1-216-853-11	METAL CHIP	470K	5%	1/10W
R703	1-216-845-11	METAL CHIP	100K	5%	1/10W
R704	1-216-845-11	METAL CHIP	100K	5%	1/10W
R705	1-216-847-11	METAL CHIP	150K	5%	1/10W
R706	1-216-851-11	METAL CHIP	330K	5%	1/10W
R707	1-216-851-11	METAL CHIP	330K	5%	1/10W
R708	1-216-853-11	METAL CHIP	470K	5%	1/10W
R709	1-216-853-11	METAL CHIP	470K	5%	1/10W
R710	1-216-845-11	METAL CHIP	100K	5%	1/10W
R711	1-216-845-11	METAL CHIP	100K	5%	1/10W
R712	1-216-847-11	METAL CHIP	150K	5%	1/10W
R713	1-216-851-11	METAL CHIP	330K	5%	1/10W
R714	1-216-851-11	METAL CHIP	330K	5%	1/10W
R715	1-216-853-11	METAL CHIP	470K	5%	1/10W
R716	1-216-853-11	METAL CHIP	470K	5%	1/10W
R717	1-216-845-11	METAL CHIP	100K	5%	1/10W
R718	1-216-845-11	METAL CHIP	100K	5%	1/10W
R719	1-216-847-11	METAL CHIP	150K	5%	1/10W
R720	1-216-851-11	METAL CHIP	330K	5%	1/10W
R721	1-216-851-11	METAL CHIP	330K	5%	1/10W
R722	1-216-857-11	METAL CHIP	1M	5%	1/10W
R723	1-216-857-11	METAL CHIP	1M	5%	1/10W
R724	1-216-857-11	METAL CHIP	1M	5%	1/10W
R725	1-216-857-11	METAL CHIP	1M	5%	1/10W
R726	1-216-857-11	METAL CHIP	1M	5%	1/10W
R727	1-216-857-11	METAL CHIP	1M	5%	1/10W
R728	1-216-857-11	METAL CHIP	1M	5%	1/10W
R729	1-216-857-11	METAL CHIP	1M	5%	1/10W
R730	1-216-845-11	METAL CHIP	100K	5%	1/10W
R731	1-216-845-11	METAL CHIP	100K	5%	1/10W
R734	1-216-845-11	METAL CHIP	100K	5%	1/10W
R736	1-216-846-11	METAL CHIP	120K	5%	1/10W
< SWITCH >					
S701	1-692-878-11	SWITCH, KEY BOARD (COUNTER RESET)			
< VIBRATOR >					
X701	1-577-306-11	OSCILLATOR, CERAMIC 1MHz			

MISCELLANEOUS					

HE901	1-543-876-11	HEAD (ERASE)			
HRP901	1-500-126-12	HEAD, MAGNETIC (RECORD/PLAYBACK)			
LCD701	1-810-464-11	DISPLAY PANEL, LIQUID CRYSTAL			
M901	1-698-452-14	MOTOR, DC			
MIC901	1-542-080-11	MICROPHONE, BUILT-IN			
SP901	1-504-691-13	SPEAKER (3.6cm)			

ACCESSORIES					

	3-758-326-16	MANUAL, INSTRUCTION			
		(ENGLISH, FRENCH, GERMAN, DUTCH)			
	3-909-958-03	CASE, CARRYING			

MEMO

REVISION HISTORY

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Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

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